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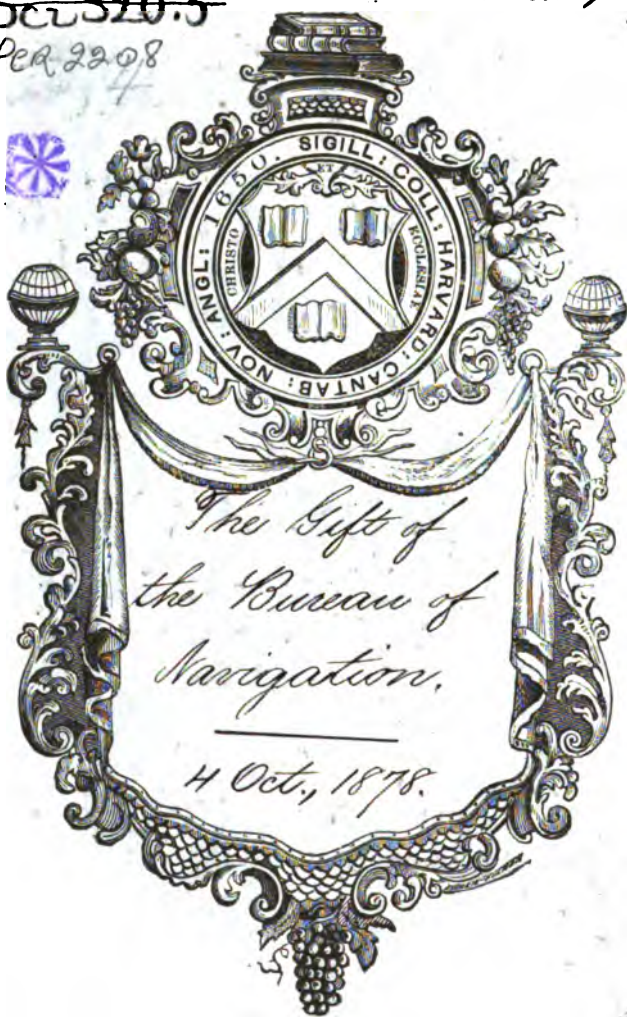
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THE

AMERICAN EPHEMERIS

AND

NAUTICAL ALMANAC

FOR THE YEAR

1881

FIRST EDITION

PUBLISHED BY AUTHORITY OF THE SECRETARY OF THE NAVY

WASHINGTON
BUREAU OF NAVIGATION
1878

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For

PREFACE.

The preparation of the *American Ephemeris and Nautical Almanac* was begun in the latter part of the year 1849, in accordance with an act of Congress, approved on the 3d of March of that year. Changes of detail have from time to time been introduced into the work, but the general plan has remained unaltered.

In the present volume ten fundamental time-stars have been added to the list, to fill gaps; the right ascensions of the time-stars have been corrected from a new investigation; and the declinations of the whole list are from a paper by Mr. LEWIS BOSS, now in press. No other important change has been made. Extensive changes are however to be made in the volume for the year 1882, including a considerable extension of the star list for the use of field observers.

An account of the data employed in the preparation will be found in the Appendix.

A supplement contains tables for finding the latitude of a place by altitudes of the pole-star.

SIMON NEWCOMB,

Professor U. S. Navy, Superintendent.

WASHINGTON, July 16, 1878.

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CORRECTIONS.

(Continued from page III of the Ephemeris for 1880.)

The Ephemerides for 1855—1869, Appendix,
 The Ephemerides for 1870—1874, page 409,
 The Ephemerides for 1875—1880, page 407,
 Mass of Saturn, *for* BESSEL, *Comptes Rendus*, 1841, *read* BESSEL, *Astr. Nachr.*, XI, 17.

EPHEMERIS FOR 1879, (first edition.)

Pages 266, 267, 268, increase right ascensions of 51 Cephei one minute.

EPHEMERIS FOR 1879, (first and second editions.)

Page	Preface and Contents,	<i>for</i> AUWER's	<i>read</i> AUWERS's
258, seventh line,		<i>for</i> $-0''.0457 \sin$	<i>read</i> $-0''.0463 \sin$
262, right ascension of ω Piscium, $23^h 53^m$,		<i>for</i> 65°.910	<i>read</i> 5°.910
334, right ascension of d^2 Cancri, $8^h 18^m$,		<i>for</i> 55°.96	<i>read</i> 58°.82
334, right ascension of π Leonis, $9^h 53^m$,		<i>for</i> 48°.60	<i>read</i> 49°.10
334, right ascension of d Leonis, $10^h 54^m$,		<i>for</i> 18°.62	<i>read</i> 18°.72
336, declination of 3 Piscium, $22^h 54^m$,		<i>for</i> $1''.0$	<i>read</i> $47''.8$
336, right ascension of ω Piscium, $23^h 53^m$,		<i>for</i> 6°.91	<i>read</i> 5°.91
341, line seventeen from bottom,		<i>for</i> page 250	<i>read</i> page 248
407, last line,		<i>for</i> 19380 ± 60	<i>read</i> 19380 ± 70
455, May 27, $8^h 21^m$,		<i>for</i> 19°.3	<i>read</i> 23°.7
455, May 27, $12^h 55^m$,		<i>for</i> 41°.3	<i>read</i> 36°.9
487, middle of page,		<i>dele</i> Such a table is given in the Appendix.	

APPENDIX.

8, column "For Seconds,"	<i>for</i> 16 16 18	<i>read</i> 16 17 18
8, reduction for $6^h 30^m$,	<i>for</i> $1^m 3^s.802$	<i>read</i> $1^m 3^s.892$
9, reduction for $11^h 38^m$,	<i>for</i> $1^m 54^s.531$	<i>read</i> $1^m 54^s.351$
10, reduction for $16^h 58^m$,	<i>for</i> $2^m 46^s.755$	<i>read</i> $2^m 46^s.775$

SUPPLEMENT.

(4), (5), (6), Table C, $88^\circ 40' 10''$,	<i>for</i> $-0''.2$ $+0''.2$	<i>read</i> $0'' 2$ $-0'' 2$
(8), Table C, column B,	<i>for</i> $1' 0''$	<i>read</i> $1' 0''$
(9), headings of columns,	<i>for</i> $88^\circ 40'$ $88^\circ 41'$	<i>read</i> $88^\circ 39'$ $88^\circ 40'$
(10), $A=56'$, declination $=88^\circ 41' 0''$,	<i>for</i> $41''.0$	<i>read</i> $42''.0$

EPHEMERIS FOR 1880, (first edition.)

Page 259, right ascension of α Eridani, $1^h 33^m$,	for $4^s.366$	read $14^s.366$
260, β Leonis, $11^h 42^m$, magnitude,	for 3	read 2
261, β Libræ, $15^h 10^m$, magnitude,	for 4.3	read 2
261, μ^1 Bootis, $15^h 19^m$, magnitude,	for 2	read 4.3
262, right ascension of 12 Year Cat. 1879,	for $20^h 53^m$	read $20^h 52^m$
262, declination of β Aquarii, $21^h 25^m$,	for $-6^\circ 6'$	read $-6^\circ 5'$
262, declination of θ Aquarii, $22^h 10^m$,	for $-8^\circ 2'$	read $-8^\circ 22'$
262, declination of π Aquarii, $22^h 19^m$,	for $+0^\circ 4'$	read $+0^\circ 46'$
266, 267, 268, increase right ascensions of 51 Cephei one minute.		
283, right ascension of β Orionis, Dec. 34.4,	for $52^s.44$	read $51^s.44$
299, declination of θ Bootis, Dec. 34.8,	for $44''.4$	read $43''.4$
318, right ascension of β Cephei,	for $21^h 17^m$	read $21^h 27^m$
321, right ascension of 226 Cephei,	for 23^h	read 22^h
333, declination of ζ Tauri, $5^h 30^m$,	for $3' 50'' 4$	read $4' 4'' 5$
333, declination of ζ Tauri, annual variation,	for $1''.73$	read $2''.56$
334, No. 63,	for ζ^1	read ζ
334, α^1 Cancræ, $8^h 36^m$, magnitude,	for 4	read 6
334, δ Cancræ, $8^h 37^m$, magnitude,	for 6	read 4
334, declination of B. A. C. 3726, $10^h 46^m$,	for $41''.3$	read $49''.3$
334, last line,	for $+20''.11$	read $-20''.11$
335, No. 120,	for 4 Virginis	read ψ Virginis
336, No. 178,	for α Sagittarii	read α Sagittarii
336, No. 204,	for κ^1 Capricorni	read κ^1 Capricorni
336, right ascension of ω Piscium, $23^h 53^m$,	for $18^s.99$	read $8^s.99$
341, line seventeen from bottom,	for page 250	read page 248
385, app. R. A. for meridian transit, Dec. 17,	for $54^s.57$	read $54^s.52$
472,	for December	read December
483, The apparent discs of Venus and Mars,	for 1879	read 1880
489, next to last line,	for B. A. C. 4351	read B. A. C. 4531
497, line fifteen from bottom,	for June	read June
501, middle of page,	dele Such a table is given in the Appendix.	
510, line eight,	for geocentric	read geocentric
511, line ten from bottom,	for $(54)=(27)+(28)$	read $(54)=(27)+(53)$

APPENDIX.

9, reduction for $11^h 38^m$,	for $1^m 54^s.531$	read $1^m 54^s.351$
9, reduction for 14^s ,	for 0.38	read .038
9, reduction for 15^s ,	for 0.41	read .041
9, reduction for $15^h 59^m$,	for $2^m 36^s.109$	read $2^m 37^s.109$
10, reduction for $16^h 58^m$,	for $2^m 46^s.755$	read $2^m 46^s.775$
19, right ascension $9^h 23^m$,	for α Ursæ Majoris	read d Ursæ Majoris
21, last line, σ Octantis,	for $-3^s.61$ $-4^s.28$	read $+3^s.61$ $+4^s.53$

SUPPLEMENT.

(1), line eight,	for $\sin^4 t \tan^2 h$	read $\sin^4 t \tan^2 h$
(1), line twelve,	for t —the hour angle	read t —the hour angle
(1), line thirteen,	for $1^\circ 20''$	read $1^\circ 20'$
(1), line twelve from bottom,	for Rednce	read Reduce
(2), line four,	for giving it to	read giving to it
(4), (5), (6), Table C, $88^\circ 40' 10''$,	for $-0''.2$ $+0''.2$	read $0''.2$ $-0''.2$
(8), Table C, column B,	for $1^m 0''$	read $1' 0''$
(9), headings of columns,	for $88^\circ 40'$ $88^\circ 41'$	read $88^\circ 39'$ $88^\circ 40'$
(10), $A=56'$, declination $=88^\circ 41' 0''$,	for $41''.0$	read $42''.0$

EPHEMERIS FOR 1881, (first edition.)

22, February 28, last column,	for $59^s.83$	read $59^s.83$
202, December 7, last column,	for $27^s.59$	read $17^s.59$

CHRONOLOGICAL ERAS AND CYCLES.

CHRONOLOGICAL ERAS.

THE YEAR 1881, WHICH COMPRISES THE LATTER PART OF THE 105TH AND THE BEGINNING OF THE 106TH YEAR OF THE INDEPENDENCE OF THE UNITED STATES OF AMERICA, CORRESPONDS TO—

The year 6594 of the Julian period;

“ 7389–90 of the Byzantine era, the year 7390 commencing on September 1;

“ 5641–42 of the Jewish era, the year 5642 commencing in September;

“ 2634 since the foundation of Rome, according to VARRO;

“ 2628 since the beginning of the era of NABONASSAR, which has been assigned to Wednesday, the 26th of February, of the 3967th year of the Julian Period, corresponding according to the reckoning of chronologists to the 747th, and according to the astronomers to the 746th year before the birth of CHRIST.

“ 2657 of the Olympiads, or the first year of the 665th Olympiad, commencing in July, 1881, if we fix the era of the Olympiads at 775½ years before CHRIST or near the beginning of July of the year 3938 of the Julian Period;

“ 2193 of the Grecian era, or the era of the Seleucidæ;

“ 1597 of the Era of DIOCLETIAN.

The year 1299 of the Mohammedan era, or the era of the Hegira, begins on the 23d day of November, 1881.

The first day of January of the year 1881 is the 2,408,082nd day since the commencement of the Julian Period.

CHRONOLOGICAL CYCLES.

Dominical Letter,	B	Solar Cycle,	14
Epact,	30	Roman Indiction,	9
Lunar Cycle or Golden Number,	1	Julian Period,	6594

SYMBOLS AND ABBREVIATIONS.

SIGNS OF THE PLANETS, &c.

☉	The Sun.	♂	Mars.
☾	The Moon	♃	Jupiter.
☿	Mercury.	♄	Saturn.
♀	Venus.	♅	Uranus.
♁	The Earth.	♆	Neptune.

SIGNS OF THE ZODIAC.

Spring signs.	{	1.	♈	Aries.	Autumn signs.	{	7.	♎	Libra.
		2.	♉	Taurus.			8.	♏	Scorpius.
		3.	♊	Gemini.			9.	♐	Sagittarius.
Summer signs.	{	4.	♋	Cancer.	Winter signs.	{	10.	♑	Capricornus.
		5.	♌	Leo.			11.	♒	Aquarius.
		6.	♍	Virgo.			12.	♓	Pisces.

ASPECTS.

♌	Conjunction, or having the same Longitude or Right Ascension.			
☐	Quadrature, or differing 90° in	"	"	"
♌	Opposition, or differing 180° in	"	"	"

ABBREVIATIONS.

♊	Ascending Node.	°	Degrees.
♋	Descending Node.	'	Minutes of Arc.
N.	North.	"	Seconds of Arc.
S.	South.	h	Hours.
E.	East.	m	Minutes of Time.
W.	West.	s	Seconds of Time.

ASTRONOMICAL EPHEMERIS

FOR THE USE OF

NAVIGATORS.

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.				
Sat.	1	^h 18 ^m 49 ^s 5.91	11.040	S. 22° 58' 27.7"	+12.95	16' 18.36"	71.06	^m 3 ^s 59.44	1.180	
Sun.	2	18 53 30.70	11.025	22 53 3.1	14.10	16 18.36	71.02	4 27.60	1.166	
Mon.	3	18 57 55.10	11.008	22 47 11.2	15.23	16 18.35	70.97	4 55.37	1.149	
Tues.	4	19 2 19.08	10.990	22 40 52.2	16.35	16 18.34	70.91	5 22.70	1.131	
Wed.	5	19 6 42.61	10.970	22 34 6.2	17.48	16 18.33	70.85	5 49.60	1.111	
Thur.	6	19 11 5.68	10.950	22 26 53.5	18.59	16 18.32	70.78	6 16.04	1.091	
Frid.	7	19 15 28.26	10.929	22 19 14.3	19.68	16 18.29	70.71	6 41.98	1.070	
Sat.	8	19 19 50.30	10.906	22 11 8.8	20.77	16 18.26	70.65	7 7.40	1.047	
Sun.	9	19 24 11.77	10.882	22 2 37.3	21.85	16 18.22	70.57	7 32.25	1.023	
Mon.	10	19 28 32.66	10.858	21 53 40.1	22.92	16 18.18	70.49	7 56.52	0.999	
Tues.	11	19 32 52.94	10.833	21 44 17.4	23.97	16 18.13	70.41	8 20.18	0.974	
Wed.	12	19 37 12.60	10.807	21 34 29.3	25.02	16 18.08	70.33	8 43.22	0.948	
Thur.	13	19 41 31.62	10.780	21 24 16.3	26.06	16 18.03	70.25	9 5.62	0.921	
Frid.	14	19 45 49.98	10.752	21 13 38.6	27.08	16 17.95	70.16	9 27.36	0.893	
Sat.	15	19 50 7.67	10.723	21 2 36.5	28.09	16 17.88	70.07	9 48.43	0.864	
Sun.	16	19 54 24.66	10.693	20 51 10.2	29.09	16 17.82	69.97	10 8.82	0.835	
Mon.	17	19 58 40.97	10.664	20 39 20.2	30.08	16 17.74	69.87	10 28.51	0.806	
Tues.	18	20 2 56.56	10.634	20 27 6.6	31.05	16 17.65	69.77	10 47.49	0.776	
Wed.	19	20 7 11.43	10.604	20 14 29.9	32.00	16 17.56	69.67	11 5.75	0.746	
Thur.	20	20 11 25.56	10.574	20 1 30.2	32.95	16 17.46	69.56	11 23.29	0.716	
Frid.	21	20 15 38.95	10.543	19 48 8.0	33.87	16 17.35	69.45	11 40.08	0.685	
Sat.	22	20 19 51.58	10.511	19 34 23.7	34.80	16 17.25	69.34	11 56.11	0.653	
Sun.	23	20 24 3.45	10.479	19 20 17.6	35.69	16 17.13	69.23	12 11.38	0.621	
Mon.	24	20 28 14.55	10.447	19 5 50.1	36.58	16 17.01	69.12	12 25.89	0.589	
Tues.	25	20 32 24.87	10.413	18 51 1.5	37.46	16 16.89	69.01	12 39.61	0.556	
Wed.	26	20 36 34.40	10.380	18 35 52.1	38.31	16 16.76	68.90	12 52.55	0.523	
Thur.	27	20 40 43.13	10.347	18 20 22.5	39.15	16 16.63	68.79	13 4.70	0.490	
Frid.	28	20 44 51.05	10.313	18 4 33.1	39.96	16 16.49	68.67	13 16.03	0.456	
Sat.	29	20 48 58.17	10.279	17 48 24.3	40.76	16 16.36	68.56	13 26.55	0.422	
Sun.	30	20 53 4.46	10.245	17 31 56.4	41.55	16 16.22	68.44	13 36.25	0.388	
Mon.	31	20 57 9.92	10.210	17 15 9.8	42.32	16 16.08	68.33	13 45.13	0.353	
Tues.	32	21 1 14.55	10.175	S. 16 58 4.9	+43.08	16 15.93	68.21	13 53.18	0.318	

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0°.13 from the Sidereal Time.

+ prefixed to the hourly change of declination indicates that the south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be subtracted from Mean Time.	Diff. for 1 hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
		^h ^m ^s	^s	[°] ['] ^{''}	^{''}	^m ^s	^s	^h ^m ^s
Sat.	1	18 49 5.18	11.036	S. 22° 56' 28.5"	+12.94	3 59.37	1.180	18 45 5.81
Sun.	2	18 53 29.88	11.022	22 53 4.2	14.09	4 27.51	1.166	18 49 2.37
Mon.	3	18 57 54.20	11.005	22 47 12.5	15.22	4 55.27	1.149	18 52 58.93
Tues.	4	19 2 18.10	10.987	22 40 53.7	16.34	5 22.60	1.131	18 56 55.50
Wed.	5	19 6 41.55	10.967	22 34 7.9	17.47	5 49.50	1.111	19 0 52.05
Thur.	6	19 11 4.54	10.947	22 26 55.5	18.58	6 15.94	1.091	19 4 48.60
Frid.	7	19 15 27.03	10.926	22 19 16.5	19.67	6 41.87	1.070	19 8 45.16
Sat.	8	19 19 49.00	10.903	22 11 11.3	20.76	7 7.28	1.047	19 12 41.72
Sun.	9	19 24 10.40	10.879	22 2 40.1	21.84	7 32.12	1.023	19 16 38.28
Mon.	10	19 28 31.22	10.855	21 53 43.2	22.91	7 56.39	0.999	19 20 34.83
Tues.	11	19 32 51.44	10.830	21 44 20.7	23.96	8 20.05	0.974	19 24 31.39
Wed.	12	19 37 11.03	10.804	21 34 33.0	25.01	8 43.08	0.948	19 28 27.95
Thur.	13	19 41 29.98	10.777	21 24 20.3	26.05	9 5.47	0.921	19 32 24.51
Frid.	14	19 45 48.28	10.749	21 13 42.9	27.07	9 27.22	0.893	19 36 21.06
Sat.	15	19 50 5.91	10.720	21 2 41.1	28.08	9 48.29	0.864	19 40 17.62
Sun.	16	19 54 22.85	10.691	20 51 15.1	29.08	10 8.68	0.835	19 44 14.17
Mon.	17	19 58 39.10	10.662	20 39 25.4	30.07	10 28.37	0.806	19 48 10.73
Tues.	18	20 2 54.64	10.632	20 27 12.2	31.04	10 47.35	0.776	19 52 7.29
Wed.	19	20 7 9.46	10.602	20 14 35.8	31.99	11 5.61	0.746	19 56 3.85
Thur.	20	20 11 23.55	10.572	20 1 36.5	32.94	11 23.15	0.716	20 0 0.40
Frid.	21	20 15 36.90	10.541	19 48 14.6	33.86	11 39.94	0.685	20 3 56.96
Sat.	22	20 19 49.49	10.509	19 34 30.7	34.79	11 55.97	0.653	20 7 53.52
Sun.	23	20 24 1.32	10.477	19 20 24.9	35.68	12 11.25	0.621	20 11 50.08
Mon.	24	20 28 12.39	10.445	19 5 57.7	36.57	12 25.76	0.589	20 15 46.63
Tues.	25	20 32 22.68	10.412	18 51 9.4	37.45	12 39.49	0.556	20 19 43.19
Wed.	26	20 36 32.17	10.379	18 36 0.3	38.30	12 52.43	0.523	20 23 39.74
Thur.	27	20 40 40.87	10.346	18 20 31.0	39.14	13 4.58	0.490	20 27 36.30
Frid.	28	20 44 48.77	10.312	18 4 41.9	39.95	13 15.92	0.456	20 31 32.85
Sat.	29	20 48 55.86	10.278	17 48 33.4	40.75	13 26.45	0.422	20 35 29.41
Sun.	30	20 53 2.13	10.244	17 32 5.8	41.54	13 36.16	0.388	20 39 25.97
Mon.	31	20 57 7.57	10.209	17 15 19.5	42.31	13 45.04	0.353	20 43 22.53
Tues.	32	21 1 12.18	10.174	S. 16 58 14.9	+43.07	13 53.10	0.318	20 47 19.08

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon

+ prefixed to the hourly change of declination indicates that the south declinations are decreasing.

Diff. for 1 hour,
+ 9".8565.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal $^{\circ}$.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE			
		λ .	λ'					
1	1	281° 17' 26.2	17' 8.2	152.96	+0.40	9.9926771	+ 0.1	5 ^h 14 ^m 2.59 ^s
2	2	282 18 37.2	18 19.0	152.96	0.49	.9926783	0.8	5 10 6.67
3	3	283 19 48.1	19 29.7	152.95	0.58	.9926812	1.5	5 6 10.76
4	4	284 20 58.7	20 40.2	152.94	0.64	.9926857	2.3	5 2 14.86
5	5	285 22 9.1	21 50.4	152.92	0.66	.9926920	3.1	4 58 18.95
6	6	286 23 19.0	23 0.1	152.90	0.66	.9927004	3.9	4 54 23.04
7	7	287 24 28.4	24 9.3	152.88	0.62	.9927109	4.8	4 50 27.13
8	8	288 25 37.2	25 18.0	152.86	0.57	.9927235	5.7	4 46 31.21
9	9	289 26 45.5	26 26.1	152.83	0.48	.9927384	6.7	4 42 35.30
10	10	290 27 53.1	27 33.6	152.80	0.39	.9927558	7.8	4 38 39.39
11	11	291 29 0.1	28 40.4	152.78	0.26	.9927758	8.9	4 34 43.48
12	12	292 30 6.5	29 46.6	152.76	+0.13	.9927984	10.0	4 30 47.57
13	13	293 31 12.4	30 52.3	152.74	0.00	.9928237	11.1	4 26 51.66
14	14	294 32 17.7	31 57.5	152.71	-0.13	.9928517	12.3	4 22 55.75
15	15	295 33 22.4	33 2.1	152.69	0.26	.9928825	13.5	4 18 59.84
16	16	296 34 26.5	34 6.1	152.66	0.37	.9929161	14.6	4 15 3.93
17	17	297 35 30.2	35 9.6	152.64	0.47	.9929524	15.7	4 11 8.01
18	18	298 36 33.5	36 12.6	152.62	0.53	.9929914	16.8	4 7 12.10
19	19	299 37 36.2	37 15.2	152.60	0.57	.9930331	17.9	4 3 16.19
20	20	300 38 38.4	38 17.3	152.58	0.57	.9930773	18.9	3 59 20.28
21	21	301 39 40.1	39 18.8	152.56	0.53	.9931239	19.8	3 55 24.37
22	22	302 40 41.4	40 19.9	152.54	0.48	.9931727	20.7	3 51 28.46
23	23	303 41 42.2	41 20.5	152.52	0.39	.9932237	21.5	3 47 32.55
24	24	304 42 42.5	42 20.7	152.50	0.30	.9932766	22.3	3 43 36.64
25	25	305 43 42.2	43 20.3	152.47	0.18	.9933313	23.1	3 39 40.72
26	26	306 44 41.3	44 19.2	152.44	-0.06	.9933877	23.8	3 35 44.81
27	27	307 45 39.6	45 17.3	152.41	+0.08	.9934457	24.5	3 31 48.90
28	28	308 46 37.1	46 14.7	152.38	0.21	.9935052	25.1	3 27 53.00
29	29	309 47 33.7	47 11.2	152.34	0.33	.9935662	25.7	3 23 57.08
30	30	310 48 29.3	48 6.7	152.30	0.43	.9936287	26.3	3 20 1.17
31	31	311 49 23.8	49 1.0	152.25	0.50	.9936925	26.9	3 16 5.26
32	32	312 50 17.2	49 54.2	152.20	+0.54	9.9937576	+27.4	3 12 9.36
NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0 th .								Diff. for 1 hour, — 9 ^h 8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.

SEMI-DIAMETER.

HORIZONTAL PARALLAX.

MERIDIAN PASSAGE.

AGE.

Noon.

Midnight.

Noon.

Diff. for
1 hour.

Midnight.

Diff. for
1 hour.Diff. for
1 hour.

Noon.

Day of the Month.	SEMI-DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.			
1	16' 44.4	16' 41.3	61' 19.8	-0.76	61' 8.2	-1.15	^h ^m 1 0.6	^m 2.52	^d 0.9
2	16 36.9	16 31.5	60 52.3	1.49	60 32.4	1.79	1 59.2	2.35	1.9
3	16 25.2	16 18.2	60 9.3	2.03	59 43.6	2.22	2 53.6	2.18	2.9
4	16 10.7	16 3.0	59 16.1	2.33	58 47.6	2.39	3 44.4	2.05	3.9
5	15 55.1	15 47.3	58 18.7	2.39	57 50.1	2.35	4 32.8	1.98	4.9
6	15 39.7	15 32.5	57 22.2	2.27	56 55.5	2.16	5 19.8	1.94	5.9
7	15 25.6	15 19.2	56 30.3	2.02	56 6.9	1.87	6 6.5	1.95	6.9
8	15 13.4	15 8.1	55 45.4	1.70	55 25.9	1.53	6 53.5	1.98	7.9
9	15 3.3	14 59.1	55 8.5	1.36	54 53.1	1.19	7 41.4	2.02	8.9
10	14 55.5	14 52.4	54 39.8	1.02	54 28.5	0.86	8 30.4	2.06	9.9
11	14 49.9	14 47.8	54 19.1	0.70	54 11.6	0.55	9 20.0	2.07	10.9
12	14 46.2	14 45.1	54 5.8	0.41	54 1.6	0.28	10 9.5	2.05	11.9
13	14 44.4	14 44.1	53 59.0	-0.15	53 57.9	-0.03	10 58.3	2.01	12.9
14	14 44.2	14 44.6	53 58.1	+0.08	53 59.7	+0.18	11 45.8	1.94	13.9
15	14 45.3	14 46.4	54 2.4	0.27	54 6.3	0.38	12 31.7	1.87	14.9
16	14 47.8	14 49.5	54 11.5	0.48	54 17.9	0.58	13 15.9	1.81	15.9
17	14 51.6	14 54.0	54 25.5	0.69	54 34.4	0.80	13 58.9	1.77	16.9
18	14 56.8	15 0.0	54 44.6	0.91	54 56.2	1.03	14 41.2	1.76	17.9
19	15 3.5	15 7.5	55 9.2	1.15	55 23.7	1.27	15 23.7	1.79	18.9
20	15 11.8	15 16.6	55 39.7	1.40	55 57.2	1.52	16 7.2	1.85	19.9
21	15 21.8	15 27.3	56 16.2	1.65	56 36.7	1.77	16 52.9	1.96	20.9
22	15 33.3	15 39.6	56 58.6	1.87	57 21.7	1.97	17 41.7	2.11	21.9
23	15 46.2	15 53.0	57 45.9	2.06	58 11.0	2.11	18 34.5	2.29	22.9
24	15 59.9	16 6.8	58 36.4	2.12	59 1.8	2.09	19 31.6	2.47	23.9
25	16 13.6	16 20.0	59 26.5	2.01	59 50.2	1.89	20 32.5	2.60	24.9
26	16 26.0	16 31.2	60 12.0	1.72	60 31.4	1.48	21 35.5	2.64	25.9
27	16 35.6	16 39.0	60 47.6	1.19	61 0.0	0.86	22 38.3	2.58	26.9
28	16 41.3	16 42.3	61 8.3	+0.50	61 11.9	+0.11	23 38.9	2.46	27.9
29	16 42.0	16 40.3	61 10.9	-0.31	61 4.8	-0.70	6		28.9
30	16 37.4	16 33.3	60 54.2	1.08	60 39.1	1.42	0 36.2	2.31	0.5
31	16 28.2	16 22.1	60 20.2	1.73	59 57.8	1.98	1 30.2	2.18	1.5
32	16 15.3	16 7.9	59 32.8	-2.18	59 5.7	-2.32	2 21.4	2.09	2.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 1.					MONDAY 3.				
0	19 43 16.09	2.5909	S. 18 53 37.3	9.685	0	21 40 26.13	2.2893	S. 9 15 9.4	13.683
1	19 45 51.72	2.5907	18 43 53.5	9.795	1	21 42 43.31	2.2835	9 1 27.3	13.790
2	19 48 26.97	2.5844	18 34 1.9	9.923	2	21 45 0.15	2.2779	8 47 43.0	13.756
3	19 51 1.85	2.5789	18 24 2.7	10.049	3	21 47 16.66	2.2723	8 33 56.6	13.789
4	19 53 36.35	2.5718	18 13 56.0	10.173	4	21 49 32.83	2.2667	8 20 8.3	13.881
5	19 56 10.46	2.5653	18 3 42.0	10.294	5	21 51 48.67	2.2613	8 6 18.1	13.851
6	19 58 44.18	2.5588	17 53 20.7	10.415	6	21 54 4.19	2.2559	7 52 26.2	13.879
7	20 1 17.52	2.5525	17 42 52.2	10.533	7	21 56 19.38	2.2505	7 38 32.6	13.906
8	20 3 50.48	2.5461	17 32 16.7	10.650	8	21 58 34.25	2.2453	7 24 37.5	13.931
9	20 6 23.05	2.5395	17 21 34.2	10.765	9	22 0 48.81	2.2401	7 10 40.9	13.954
10	20 8 55.22	2.5329	17 10 44.9	10.877	10	22 3 3.06	2.2349	6 56 43.0	13.976
11	20 11 27.00	2.5264	16 59 48.9	10.988	11	22 5 17.00	2.2298	6 42 43.8	13.996
12	20 13 58.39	2.5198	16 48 46.3	11.097	12	22 7 30.64	2.2246	6 28 43.5	14.014
13	20 16 29.38	2.5139	16 37 37.3	11.203	13	22 9 43.98	2.2196	6 14 42.1	14.032
14	20 18 59.97	2.5085	16 26 22.0	11.308	14	22 11 57.02	2.2149	6 0 39.7	14.047
15	20 21 30.16	2.4998	16 15 0.4	11.410	15	22 14 9.77	2.2102	5 46 36.5	14.060
16	20 23 59.95	2.4933	16 3 32.8	11.510	16	22 16 22.24	2.2054	5 32 32.5	14.073
17	20 26 29.34	2.4865	15 51 59.2	11.609	17	22 18 34.42	2.2007	5 18 27.7	14.084
18	20 28 58.33	2.4798	15 40 19.7	11.708	18	22 20 46.32	2.1960	5 4 22.4	14.093
19	20 31 26.92	2.4733	15 28 34.5	11.800	19	22 22 57.94	2.1915	4 50 16.6	14.101
20	20 33 55.11	2.4665	15 16 43.7	11.892	20	22 25 9.30	2.1871	4 36 10.3	14.108
21	20 36 22.90	2.4598	15 4 47.5	11.983	21	22 27 20.39	2.1827	4 22 3.7	14.113
22	20 38 50.29	2.4531	14 52 45.9	12.070	22	22 29 31.22	2.1783	4 7 56.8	14.116
23	20 41 17.28	2.4464	S. 14 40 39.1	12.157	23	22 31 41.79	2.1740	S. 3 53 49.8	14.117
SUNDAY 2.					TUESDAY 4.				
0	20 43 43.86	2.4398	S. 14 28 27.1	12.242	0	22 33 52.10	2.1698	S. 3 39 42.7	14.118
1	20 46 10.05	2.4338	14 16 10.1	12.323	1	22 36 2.17	2.1657	3 25 35.6	14.118
2	20 48 35.84	2.4285	14 3 48.3	12.403	2	22 38 11.99	2.1617	3 11 28.6	14.116
3	20 51 1.23	2.4199	13 51 21.7	12.482	3	22 40 21.57	2.1577	2 57 21.7	14.119
4	20 53 26.23	2.4134	13 38 50.4	12.559	4	22 42 30.91	2.1538	2 43 15.1	14.107
5	20 55 50.84	2.4068	13 26 14.6	12.633	5	22 44 40.02	2.1500	2 29 8.8	14.101
6	20 58 15.05	2.4002	13 13 34.4	12.706	6	22 46 48.91	2.1462	2 15 3.0	14.093
7	21 0 38.87	2.3937	13 0 49.9	12.776	7	22 48 57.57	2.1425	2 0 57.7	14.084
8	21 3 2.30	2.3873	12 48 1.3	12.844	8	22 51 6.01	2.1389	1 46 52.9	14.075
9	21 5 25.35	2.3809	12 35 8.6	12.911	9	22 53 14.24	2.1354	1 32 48.7	14.063
10	21 7 48.01	2.3745	12 22 12.0	12.976	10	22 55 22.26	2.1319	1 18 45.3	14.050
11	21 10 10.29	2.3681	12 9 11.5	13.039	11	22 57 30.07	2.1285	1 4 42.7	14.037
12	21 12 32.18	2.3618	11 56 7.3	13.100	12	22 59 37.68	2.1252	0 50 40.9	14.022
13	21 14 53.70	2.3555	11 42 59.5	13.158	13	23 1 45.09	2.1219	0 36 40.1	14.005
14	21 17 14.84	2.3493	11 29 48.3	13.215	14	23 3 52.31	2.1187	0 22 40.3	13.988
15	21 19 35.61	2.3430	11 16 33.7	13.270	15	23 5 59.34	2.1157	S. 0 8 41.5	13.970
16	21 21 56.00	2.3368	11 3 15.9	13.323	16	23 8 6.19	2.1127	N. 0 5 16.1	13.949
17	21 24 16.03	2.3307	10 49 54.9	13.375	17	23 10 12.86	2.1097	0 19 12.4	13.928
18	21 26 35.69	2.3246	10 36 30.9	13.424	18	23 12 19.35	2.1067	0 33 7.4	13.906
19	21 28 54.98	2.3186	10 23 4.0	13.473	19	23 14 25.67	2.1039	0 47 1.1	13.883
20	21 31 13.92	2.3127	10 9 34.3	13.518	20	23 16 31.82	2.1012	1 0 53.3	13.858
21	21 33 32.50	2.3067	9 56 1.8	13.562	21	23 18 37.81	2.0985	1 14 44.0	13.833
22	21 35 50.72	2.3008	9 42 26.8	13.604	22	23 20 43.64	2.0959	1 28 33.2	13.807
23	21 38 8.60	2.2951	9 28 49.3	13.645	23	23 22 49.32	2.0934	1 42 20.8	13.778
24	21 40 26.13	2.2893	S. 9 15 9.4	13.683	24	23 24 54.85	2.0910	N. 1 56 6.6	13.748

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 5.					FRIDAY 7.				
0	^h 23 ^m 24 ^s 54.85	2.0010	N. 1° 56' 6"	13.748	0	^h 1 ^m 3 ^s 42.20	2.0484	N. 12° 4' 55.1"	11.997
1	23 27 0.24	2.0086	2 9 50.6	13.719	1	1 5 45.12	2.0489	12 16 10.8	11.927
2	23 29 5.48	2.0089	2 23 32.9	13.689	2	1 7 48.07	2.0494	12 27 22.3	11.157
3	23 31 10.58	2.0039	2 37 13.3	13.657	3	1 9 51.05	2.0499	12 38 29.6	11.086
4	23 33 15.55	2.0018	2 50 51.7	13.623	4	1 11 54.06	2.0504	12 49 32.6	11.014
5	23 35 20.40	2.0797	3 4 28.1	13.589	5	1 13 57.10	2.0510	13 0 31.2	10.941
6	23 37 25.12	2.0777	3 18 2.4	13.554	6	1 16 0.18	2.0517	13 11 25.5	10.867
7	23 39 29.72	2.0757	3 31 34.6	13.518	7	1 18 3.31	2.0525	13 22 15.3	10.793
8	23 41 34.20	2.0737	3 45 4.6	13.481	8	1 20 6.48	2.0532	13 33 0.7	10.719
9	23 43 38.57	2.0719	3 58 32.3	13.443	9	1 22 9.70	2.0540	13 43 41.6	10.644
10	23 45 42.83	2.0709	4 11 57.7	13.404	10	1 24 12.96	2.0548	13 54 18.0	10.569
11	23 47 46.99	2.0685	4 25 20.8	13.365	11	1 26 16.28	2.0557	14 4 49.8	10.492
12	23 49 51.05	2.0668	4 38 41.5	13.324	12	1 28 19.65	2.0567	14 15 17.0	10.414
13	23 51 55.01	2.0652	4 51 59.7	13.282	13	1 30 23.08	2.0576	14 25 39.5	10.336
14	23 53 58.88	2.0638	5 5 15.3	13.238	14	1 32 26.56	2.0585	14 35 57.3	10.258
15	23 56 2.67	2.0624	5 18 28.3	13.195	15	1 34 30.10	2.0595	14 46 10.5	10.180
16	23 58 6.37	2.0610	5 31 38.7	13.151	16	1 36 33.70	2.0603	14 56 18.9	10.100
17	0 0 9.99	2.0597	5 44 46.4	13.105	17	1 38 37.37	2.0617	15 6 22.5	10.020
18	0 2 13.53	2.0584	5 57 51.3	13.058	18	1 40 41.10	2.0628	15 16 21.3	9.939
19	0 4 17.00	2.0572	6 10 53.4	13.012	19	1 42 44.90	2.0639	15 26 15.2	9.858
20	0 6 20.40	2.0562	6 23 52.7	12.964	20	1 44 48.77	2.0651	15 36 4.2	9.776
21	0 8 23.74	2.0552	6 36 49.1	12.915	21	1 46 52.71	2.0662	15 45 48.3	9.693
22	0 10 27.02	2.0542	6 49 42.5	12.865	22	1 48 56.72	2.0674	15 55 27.4	9.610
23	0 12 30.24	2.0532	N. 7 2 32.9	12.814	23	1 51 0.80	2.0687	N. 16 5 1.5	9.527
THURSDAY 6.					SATURDAY 8.				
0	0 14 33.40	2.0522	N. 7 15 20.2	12.769	0	1 53 4.96	2.0700	N. 16 14 30.6	9.442
1	0 16 36.52	2.0516	7 28 4.4	12.710	1	1 55 9.20	2.0712	16 23 54.6	9.357
2	0 18 39.59	2.0508	7 40 45.4	12.658	2	1 57 13.51	2.0725	16 33 13.5	9.272
3	0 20 42.61	2.0500	7 53 23.3	12.605	3	1 59 17.90	2.0738	16 42 27.2	9.186
4	0 22 45.59	2.0494	8 5 58.0	12.550	4	2 1 22.37	2.0752	16 51 35.8	9.099
5	0 24 48.54	2.0489	8 18 29.3	12.493	5	2 3 26.93	2.0767	17 0 39.1	9.012
6	0 26 51.46	2.0484	8 30 57.2	12.437	6	2 5 31.57	2.0780	17 9 37.2	8.924
7	0 28 54.35	2.0480	8 43 21.7	12.380	7	2 7 36.29	2.0794	17 18 30.0	8.836
8	0 30 57.22	2.0476	8 55 42.8	12.322	8	2 9 41.10	2.0808	17 27 17.5	8.747
9	0 33 0.06	2.0472	9 8 0.4	12.263	9	2 11 45.99	2.0822	17 35 59.7	8.658
10	0 35 2.88	2.0469	9 20 14.4	12.204	10	2 13 50.97	2.0837	17 44 36.5	8.568
11	0 37 5.69	2.0467	9 32 24.9	12.145	11	2 15 56.04	2.0852	17 53 7.9	8.478
12	0 39 8.48	2.0464	9 44 31.8	12.084	12	2 18 1.20	2.0867	18 1 33.9	8.387
13	0 41 11.26	2.0463	9 56 35.0	12.022	13	2 20 6.45	2.0882	18 9 54.4	8.296
14	0 43 14.04	2.0463	10 8 34.4	11.959	14	2 22 11.79	2.0897	18 18 9.4	8.204
15	0 45 16.82	2.0463	10 20 30.1	11.896	15	2 24 17.21	2.0912	18 26 18.9	8.112
16	0 47 19.60	2.0463	10 32 22.0	11.832	16	2 26 22.73	2.0927	18 34 22.8	8.019
17	0 49 22.38	2.0464	10 44 10.0	11.768	17	2 28 28.34	2.0943	18 42 21.1	7.926
18	0 51 25.17	2.0466	10 55 54.2	11.703	18	2 30 34.05	2.0959	18 50 13.9	7.832
19	0 53 27.97	2.0467	11 7 34.4	11.637	19	2 32 39.85	2.0974	18 58 1.0	7.737
20	0 55 30.78	2.0469	11 19 10.6	11.571	20	2 34 45.74	2.0989	19 5 42.4	7.642
21	0 57 33.60	2.0472	11 30 42.9	11.504	21	2 36 51.72	2.1005	19 13 18.0	7.546
22	0 59 36.44	2.0476	11 42 11.1	11.436	22	2 38 57.80	2.1021	19 20 47.9	7.451
23	1 1 39.31	2.0480	11 53 35.2	11.367	23	2 41 3.97	2.1037	19 28 12.1	7.355
24	1 3 42.20	2.0484	N. 12 4 55.1	11.297	24	2 43 10.24	2.1052	N. 19 35 30.5	7.258

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 9.					TUESDAY 11.				
0	2 43 10.24	2.1059	N.19° 35' 30.5"	7.358	0	4 25 48.15	2.1090	N.23° 24' 45.0"	2.172
1	2 45 16.60	2.1068	19 42 43.1	7.161	1	4 27 57.88	2.1094	23 26 51.9	2.059
2	2 47 23.06	2.1064	19 49 49.8	7.063	2	4 30 7.64	2.1098	23 28 52.1	1.947
3	2 49 29.61	2.1090	19 56 50.6	6.964	3	4 32 17.42	2.1092	23 30 45.6	1.835
4	2 51 36.25	2.1115	20 3 45.5	6.866	4	4 34 27.22	2.1035	23 32 32.3	1.723
5	2 53 42.99	2.1131	20 10 34.5	6.767	5	4 36 37.04	2.1037	23 34 12.2	1.609
6	2 55 49.82	2.1144	20 17 17.6	6.668	6	4 38 46.87	2.1039	23 35 45.4	1.497
7	2 57 56.74	2.1161	20 23 54.7	6.568	7	4 40 56.71	2.1041	23 37 11.8	1.384
8	3 0 3.75	2.1177	20 30 25.7	6.467	8	4 43 6.56	2.1043	23 38 31.5	1.272
9	3 2 10.86	2.1199	20 36 50.7	6.367	9	4 45 16.42	2.1044	23 39 44.4	1.159
10	3 4 18.06	2.1207	20 43 9.7	6.265	10	4 47 26.29	2.1044	23 40 50.5	1.046
11	3 6 25.35	2.1222	20 49 22.5	6.163	11	4 49 36.15	2.1043	23 41 49.9	0.933
12	3 8 32.73	2.1237	20 55 29.2	6.061	12	4 51 46.01	2.1042	23 42 42.5	0.820
13	3 10 40.20	2.1252	21 1 29.8	5.958	13	4 53 55.86	2.1042	23 43 28.3	0.707
14	3 12 47.76	2.1267	21 7 24.2	5.856	14	4 56 5.71	2.1041	23 44 7.3	0.594
15	3 14 55.41	2.1282	21 13 12.5	5.753	15	4 58 15.55	2.1039	23 44 39.6	0.481
16	3 17 3.14	2.1296	21 18 54.5	5.649	16	5 0 25.37	2.1036	23 45 5.1	0.368
17	3 19 10.96	2.1310	21 24 30.3	5.545	17	5 2 35.18	2.1033	23 45 23.8	0.256
18	3 21 18.86	2.1294	21 29 59.9	5.441	18	5 4 44.97	2.1029	23 45 35.8	0.143
19	3 23 26.85	2.1298	21 35 23.2	5.336	19	5 6 54.73	2.1025	23 45 41.0	+0.030
20	3 25 34.92	2.1299	21 40 40.2	5.231	20	5 9 4.47	2.1021	23 45 39.4	-0.082
21	3 27 43.07	2.1295	21 45 50.9	5.125	21	5 11 14.18	2.1016	23 45 31.1	0.195
22	3 29 51.30	2.1278	21 50 55.2	5.019	22	5 13 23.86	2.1011	23 45 16.0	0.307
23	3 31 59.61	2.1299	N.21° 55' 53.2"	4.913	23	5 15 33.51	2.1005	N.23° 44' 54.2"	0.420
MONDAY 10.					WEDNESDAY 12.				
0	3 34 8.00	2.1404	N.22° 0' 44.8"	4.807	0	5 17 43.12	2.1506	N.23° 44' 25.6"	0.539
1	3 36 16.46	2.1417	22 5 30.0	4.700	1	5 19 52.69	2.1501	23 43 50.3	0.644
2	3 38 25.00	2.1430	22 10 8.8	4.592	2	5 22 2.22	2.1504	23 43 8.3	0.757
3	3 40 33.62	2.1442	22 14 41.1	4.485	3	5 24 11.70	2.1577	23 42 19.5	0.869
4	3 42 42.31	2.1453	22 19 7.0	4.377	4	5 26 21.14	2.1568	23 41 24.0	0.981
5	3 44 51.06	2.1464	22 23 26.4	4.269	5	5 28 30.52	2.1559	23 40 21.8	1.092
6	3 46 59.88	2.1476	22 27 39.3	4.161	6	5 30 39.85	2.1550	23 39 13.0	1.203
7	3 49 8.77	2.1487	22 31 45.7	4.053	7	5 32 49.12	2.1540	23 37 57.5	1.314
8	3 51 17.72	2.1497	22 35 45.6	3.945	8	5 34 58.33	2.1531	23 36 35.3	1.426
9	3 53 26.74	2.1506	22 39 38.9	3.834	9	5 37 7.49	2.1521	23 35 6.4	1.537
10	3 55 35.82	2.1518	22 43 25.7	3.725	10	5 39 16.58	2.1509	23 33 30.9	1.647
11	3 57 44.96	2.1527	22 47 5.9	3.616	11	5 41 25.60	2.1498	23 31 48.8	1.757
12	3 59 54.15	2.1537	22 50 39.6	3.507	12	5 43 34.55	2.1486	23 30 0.0	1.868
13	4 2 3.40	2.1546	22 54 6.7	3.398	13	5 45 43.43	2.1473	23 28 4.6	1.978
14	4 4 12.70	2.1555	22 57 27.1	3.288	14	5 47 52.23	2.1460	23 26 2.6	2.087
15	4 6 22.06	2.1563	23 0 40.9	3.175	15	5 50 0.95	2.1447	23 23 54.1	2.197
16	4 8 31.46	2.1571	23 3 48.1	3.064	16	5 52 9.59	2.1433	23 21 39.0	2.306
17	4 10 40.91	2.1578	23 6 48.6	2.953	17	5 54 18.14	2.1418	23 19 17.4	2.415
18	4 12 50.40	2.1586	23 9 42.4	2.841	18	5 56 26.61	2.1404	23 16 49.2	2.524
19	4 14 59.94	2.1592	23 12 29.5	2.730	19	5 58 34.99	2.1389	23 14 14.5	2.632
20	4 17 9.51	2.1598	23 15 10.0	2.619	20	6 0 43.28	2.1373	23 11 33.3	2.740
21	4 19 19.12	2.1604	23 17 43.8	2.507	21	6 2 51.47	2.1358	23 8 45.7	2.847
22	4 21 28.76	2.1610	23 20 10.9	2.396	22	6 4 59.57	2.1342	23 5 51.6	2.955
23	4 23 38.44	2.1616	23 22 31.3	2.284	23	6 7 7.57	2.1326	23 2 51.1	3.062
24	4 25 48.15	2.1620	N.23° 24' 45.0"	2.172	24	6 9 15.47	2.1307	N.22° 59' 44.2"	3.168

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 13.					SATURDAY 15.				
0	6 9 15.47	2.1307	N.22° 59' 44.2"	3.168	0	7 48 58.53	2.0163	N.18° 33' 7.7"	7.736
1	6 11 23.26	2.1390	22 56 30.9	3.975	1	7 50 59.43	2.0137	18 25 21.1	7.817
2	6 13 30.95	2.1373	22 53 11.2	3.382	2	7 53 0.17	2.0110	18 17 29.7	7.897
3	6 15 38.53	2.1354	22 49 45.1	3.488	3	7 55 0.75	2.0083	18 9 33.5	7.977
4	6 17 46.00	2.1335	22 46 12.7	3.593	4	7 57 1.17	2.0057	18 1 32.5	8.057
5	6 19 53.35	2.1316	22 42 34.0	3.697	5	7 59 1.43	2.0030	17 53 26.7	8.136
6	6 22 0.59	2.1197	22 38 49.1	3.801	6	8 1 1.52	2.0004	17 45 16.2	8.213
7	6 24 7.71	2.1177	22 34 57.9	3.906	7	8 3 1.45	1.9976	17 37 1.1	8.290
8	6 26 14.71	2.1157	22 31 0.4	4.010	8	8 5 1.23	1.9950	17 28 41.4	8.366
9	6 28 21.59	2.1137	22 26 56.7	4.113	9	8 7 0.85	1.9923	17 20 17.2	8.442
10	6 30 28.35	2.1116	22 22 46.8	4.216	10	8 9 0.31	1.9897	17 11 48.4	8.517
11	6 32 34.98	2.1094	22 18 30.8	4.318	11	8 10 59.61	1.9870	17 3 15.2	8.591
12	6 34 41.48	2.1072	22 14 8.7	4.419	12	8 12 58.75	1.9844	16 54 37.5	8.665
13	6 36 47.85	2.1051	22 9 40.5	4.521	13	8 14 57.74	1.9818	16 45 55.4	8.738
14	6 38 54.09	2.1029	22 5 6.2	4.622	14	8 16 56.57	1.9792	16 37 9.0	8.810
15	6 41 0.20	2.1007	22 0 25.8	4.723	15	8 18 55.24	1.9766	16 28 18.2	8.882
16	6 43 6.17	2.0984	21 55 39.4	4.823	16	8 20 53.76	1.9741	16 19 23.1	8.953
17	6 45 12.01	2.0962	21 50 47.0	4.923	17	8 22 52.13	1.9716	16 10 23.8	9.023
18	6 47 17.71	2.0938	21 45 48.7	5.022	18	8 24 50.35	1.9691	16 1 20.3	9.093
19	6 49 23.27	2.0915	21 40 44.4	5.120	19	8 26 48.42	1.9665	15 52 12.6	9.168
20	6 51 28.69	2.0891	21 35 34.3	5.218	20	8 28 46.33	1.9639	15 43 0.8	9.239
21	6 53 33.96	2.0867	21 30 18.3	5.316	21	8 30 44.09	1.9615	15 33 45.0	9.307
22	6 55 39.09	2.0843	21 24 56.4	5.413	22	8 32 41.71	1.9591	15 24 25.2	9.363
23	6 57 44.08	2.0819	N.21 19 28.7	5.509	23	8 34 39.18	1.9567	N.15 15 1.4	9.430
FRIDAY 14.					SUNDAY 16.				
0	6 59 48.92	2.0794	N.21 13 55.3	5.605	0	8 36 36.51	1.9543	N.15 5 33.6	9.496
1	7 1 53.61	2.0769	21 8 16.1	5.701	1	8 38 33.69	1.9518	14 56 1.9	9.560
2	7 3 58.15	2.0744	21 2 31.2	5.796	2	8 40 30.73	1.9495	14 46 26.4	9.624
3	7 6 2.54	2.0719	20 56 40.6	5.890	3	8 42 27.63	1.9472	14 36 47.0	9.688
4	7 8 6.78	2.0694	20 50 44.4	5.984	4	8 44 24.39	1.9448	14 27 3.8	9.751
5	7 10 10.87	2.0668	20 44 42.6	6.078	5	8 46 21.01	1.9425	14 17 16.9	9.813
6	7 12 14.80	2.0642	20 38 35.1	6.171	6	8 48 17.49	1.9403	14 7 26.3	9.874
7	7 14 18.58	2.0617	20 32 22.1	6.263	7	8 50 13.84	1.9381	13 57 32.0	9.935
8	7 16 22.20	2.0591	20 26 3.6	6.353	8	8 52 10.06	1.9358	13 47 34.1	9.994
9	7 18 25.67	2.0565	20 19 39.7	6.444	9	8 54 6.14	1.9336	13 37 32.7	10.053
10	7 20 28.98	2.0538	20 13 10.3	6.535	10	8 56 2.09	1.9315	13 27 27.7	10.111
11	7 22 32.13	2.0512	20 6 35.5	6.625	11	8 57 57.92	1.9294	13 17 19.3	10.169
12	7 24 35.12	2.0485	19 59 55.3	6.714	12	8 59 53.62	1.9273	13 7 7.4	10.227
13	7 26 37.95	2.0459	19 53 9.8	6.803	13	9 1 49.20	1.9252	12 56 52.1	10.283
14	7 28 40.63	2.0433	19 46 19.0	6.891	14	9 3 44.65	1.9230	12 46 33.5	10.338
15	7 30 43.15	2.0407	19 39 22.9	6.978	15	9 5 39.98	1.9219	12 36 11.6	10.393
16	7 32 45.51	2.0379	19 32 21.6	7.065	16	9 7 35.19	1.9198	12 25 46.4	10.448
17	7 34 47.70	2.0352	19 25 15.1	7.151	17	9 9 30.29	1.9177	12 15 17.9	10.502
18	7 36 49.73	2.0325	19 18 3.5	7.236	18	9 11 25.27	1.9154	12 4 46.2	10.554
19	7 38 51.60	2.0298	19 10 46.8	7.321	19	9 13 20.14	1.9136	11 54 11.4	10.606
20	7 40 53.31	2.0272	19 3 25.0	7.406	20	9 15 14.90	1.9117	11 43 33.5	10.657
21	7 42 54.86	2.0245	18 55 58.1	7.490	21	9 17 9.55	1.9099	11 32 52.6	10.707
22	7 44 56.25	2.0217	18 48 26.2	7.572	22	9 19 4.09	1.9089	11 22 8.7	10.757
23	7 46 57.47	2.0190	18 40 49.4	7.654	23	9 20 58.53	1.9065	11 11 21.7	10.807
24	7 48 58.53	2.0163	N.18 33 7.7	7.736	24	9 22 52.87	1.9048	N.11 0 31.8	10.855

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 17.					WEDNESDAY 19.				
0	9 22 52.87	1.9048	N. 11° 0' 31.8"	10.855	0	10 53 13.76	1.8791	N. 1° 37' 5.0"	12.347
1	9 24 47.11	1.9032	10 49 39.0	10.903	1	10 55 6.53	1.8799	1 24 43.8	12.360
2	9 26 41.25	1.9016	10 38 43.5	10.950	2	10 56 50.35	1.8807	1 12 21.8	12.373
3	9 28 35.30	1.9000	10 27 45.1	10.997	3	10 58 52.21	1.8815	0 59 59.0	12.386
4	9 30 29.25	1.8984	10 16 43.9	11.042	4	11 0 45.13	1.8826	0 47 35.5	12.397
5	9 32 23.11	1.8970	10 5 40.0	11.087	5	11 2 38.12	1.8837	0 35 11.4	12.407
6	9 34 16.89	1.8956	9 54 33.4	11.132	6	11 4 31.17	1.8847	0 22 46.7	12.417
7	9 36 10.58	1.8942	9 43 24.2	11.175	7	11 6 24.28	1.8858	N. 0 10 21.4	12.426
8	9 38 4.19	1.8928	9 32 12.4	11.217	8	11 8 17.47	1.8871	S. 0 2 4.4	12.433
9	9 39 57.72	1.8915	9 20 58.1	11.260	9	11 10 10.73	1.8884	0 14 30.6	12.440
10	9 41 51.17	1.8902	9 9 41.2	11.302	10	11 12 4.07	1.8897	0 26 57.2	12.447
11	9 43 44.55	1.8890	8 58 21.9	11.342	11	11 13 57.49	1.8911	0 39 24.2	12.453
12	9 45 37.85	1.8878	8 47 0.2	11.382	12	11 15 51.00	1.8926	0 51 51.6	12.459
13	9 47 31.08	1.8867	8 35 36.1	11.421	13	11 17 44.60	1.8941	1 4 19.3	12.463
14	9 49 24.25	1.8857	8 24 9.7	11.460	14	11 19 38.29	1.8956	1 16 47.2	12.466
15	9 51 17.36	1.8847	8 12 40.9	11.498	15	11 21 32.07	1.8972	1 29 15.2	12.468
16	9 53 10.41	1.8837	8 1 9.9	11.535	16	11 23 25.96	1.8990	1 41 43.4	12.471
17	9 55 3.40	1.8827	7 49 36.7	11.572	17	11 25 19.95	1.9008	1 54 11.7	12.473
18	9 56 56.33	1.8818	7 38 1.3	11.607	18	11 27 14.05	1.9025	2 6 40.1	12.473
19	9 58 49.21	1.8809	7 26 23.8	11.642	19	11 29 8.26	1.9045	2 19 8.5	12.479
20	10 0 42.04	1.8801	7 14 44.2	11.677	20	11 31 2.59	1.9065	2 31 36.8	12.471
21	10 2 34.82	1.8793	7 3 2.6	11.710	21	11 32 57.04	1.9085	2 44 5.0	12.469
22	10 4 27.56	1.8787	6 51 19.0	11.743	22	11 34 51.61	1.9106	2 56 33.1	12.467
23	10 6 20.26	1.8780	N. 6 39 33.5	11.775	23	11 36 46.31	1.9127	S 3 9 1.0	12.463
TUESDAY 18.					THURSDAY 20.				
0	10 8 12.92	1.8773	N. 6 27 46.0	11.807	0	11 38 41.14	1.9149	S. 3 21 28.7	12.459
1	10 10 5.54	1.8768	6 15 56.6	11.838	1	11 40 36.10	1.9173	3 33 56.1	12.453
2	10 11 58.14	1.8764	6 4 5.4	11.867	2	11 42 31.21	1.9197	3 46 23.1	12.447
3	10 13 50.71	1.8760	5 52 12.5	11.897	3	11 44 26.46	1.9221	3 58 49.8	12.441
4	10 15 43.26	1.8756	5 40 17.8	11.926	4	11 46 21.86	1.9246	4 11 16.0	12.433
5	10 17 35.78	1.8752	5 28 21.4	11.953	5	11 48 17.41	1.9272	4 23 41.7	12.424
6	10 19 28.28	1.8749	5 16 23.4	11.980	6	11 50 13.12	1.9298	4 36 6.9	12.415
7	10 21 20.77	1.8747	5 4 23.8	12.007	7	11 52 8.98	1.9324	4 48 31.5	12.405
8	10 23 13.24	1.8744	4 52 22.6	12.033	8	11 54 5.01	1.9352	5 0 55.5	12.394
9	10 25 5.70	1.8743	4 40 19.8	12.058	9	11 56 1.21	1.9381	5 13 18.8	12.389
10	10 26 58.16	1.8742	4 28 15.6	12.083	10	11 57 57.58	1.9410	5 25 41.4	12.389
11	10 28 50.61	1.8742	4 16 9.9	12.107	11	11 59 54.13	1.9439	5 38 3.1	12.355
12	10 30 43.06	1.8743	4 4 2.8	12.130	12	12 1 50.85	1.9469	5 50 24.0	12.341
13	10 32 35.52	1.8744	3 51 54.3	12.152	13	12 3 47.76	1.9500	6 2 44.0	12.326
14	10 34 27.99	1.8746	3 39 44.6	12.173	14	12 5 44.85	1.9531	6 15 3.1	12.310
15	10 36 20.47	1.8747	3 27 33.6	12.193	15	12 7 42.13	1.9563	6 27 21.2	12.299
16	10 38 12.96	1.8749	3 15 21.4	12.213	16	12 9 39.61	1.9597	6 39 38.2	12.274
17	10 40 5.46	1.8752	3 3 8.0	12.232	17	12 11 37.29	1.9631	6 51 54.1	12.255
18	10 41 57.98	1.8756	2 50 53.5	12.251	18	12 13 35.16	1.9665	7 4 8.8	12.235
19	10 43 50.53	1.8760	2 38 37.9	12.269	19	12 15 33.27	1.9700	7 16 22.3	12.214
20	10 45 43.10	1.8765	2 26 21.3	12.286	20	12 17 31.58	1.9736	7 28 34.5	12.199
21	10 47 35.71	1.8771	2 14 3.6	12.302	21	12 19 30.10	1.9772	7 40 45.4	12.170
22	10 49 28.36	1.8777	2 1 45.0	12.318	22	12 21 28.84	1.9808	7 52 54.9	12.147
23	10 51 21.04	1.8783	1 49 25.4	12.333	23	12 23 27.80	1.9846	8 5 3.0	12.122
24	10 53 13.76	1.8791	N. 1 37 5.0	12.347	24	12 25 26.99	1.9884	S. 8 17 9.6	12.097

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 21.					SUNDAY 23.				
0	12 25 26.99	1.9684	S. 8 17 9.6	12.087	0	14 6 30.56	2.3449	S. 17 8 31.8	9.599
1	12 27 26.41	1.9683	8 29 14.6	12.070	1	14 8 45.41	2.3508	17 18 5.3	9.517
2	12 29 26.07	1.9683	8 41 18.0	12.043	2	14 11 0.66	2.3574	17 27 33.9	9.434
3	12 31 25.97	2.0003	8 53 19.8	12.016	3	14 13 16.30	2.3640	17 36 57.4	9.348
4	12 33 26.11	2.0044	9 5 19.9	11.986	4	14 15 32.34	2.3706	17 46 15.7	9.268
5	12 35 26.50	2.0066	9 17 18.1	11.954	5	14 17 48.78	2.3772	17 55 28.9	9.178
6	12 37 27.14	2.0198	9 29 14.4	11.923	6	14 20 5.61	2.3839	18 4 36.8	9.087
7	12 39 28.03	2.0171	9 41 8.8	11.891	7	14 22 22.85	2.3907	18 13 39.3	8.996
8	12 41 29.19	2.0815	9 53 1.3	11.858	8	14 24 40.49	2.3974	18 22 36.3	8.904
9	12 43 30.61	2.0859	10 4 51.8	11.824	9	14 26 58.54	2.3049	18 31 27.8	8.811
10	12 45 32.30	2.0304	10 16 40.2	11.788	10	14 29 17.00	2.3110	18 40 13.6	8.716
11	12 47 34.26	2.0349	10 28 26.4	11.752	11	14 31 35.86	2.3178	18 48 53.7	8.620
12	12 49 36.49	2.0395	10 40 10.4	11.714	12	14 33 55.13	2.3246	18 57 28.0	8.523
13	12 51 39.00	2.0449	10 51 52.1	11.676	13	14 36 14.81	2.3314	19 5 56.4	8.423
14	12 53 41.80	2.0490	11 3 31.5	11.637	14	14 38 34.90	2.3382	19 14 18.8	8.322
15	12 55 44.88	2.0538	11 15 8.5	11.596	15	14 40 55.39	2.3450	19 22 35.2	8.222
16	12 57 48.25	2.0587	11 26 43.0	11.554	16	14 43 16.30	2.3519	19 30 45.4	8.118
17	12 59 51.92	2.0636	11 38 15.0	11.512	17	14 45 37.62	2.3587	19 38 49.4	8.014
18	13 1 55.88	2.0685	11 49 44.4	11.467	18	14 47 59.35	2.3656	19 46 47.1	7.908
19	13 4 0.14	2.0736	12 1 11.1	11.422	19	14 50 21.49	2.3724	19 54 38.4	7.801
20	13 6 4.71	2.0788	12 12 35.1	11.377	20	14 52 44.04	2.3792	20 2 23.2	7.692
21	13 8 9.60	2.0841	12 23 56.3	11.339	21	14 55 7.00	2.3861	20 10 1.4	7.589
22	13 10 14.80	2.0893	12 35 14.6	11.291	22	14 57 30.37	2.3929	20 17 33.0	7.470
23	13 12 20.31	2.0945	S. 12 46 30.0	11.239	23	14 59 54.15	2.3998	S. 20 24 57.8	7.358
SATURDAY 22.					MONDAY 24.				
0	13 14 26.14	2.0999	S. 12 57 42.4	11.181	0	15 2 18.34	2.4068	S. 20 32 15.7	7.241
1	13 16 32.30	2.1052	13 8 51.7	11.139	1	15 4 42.94	2.4133	20 39 26.7	7.125
2	13 18 38.78	2.1107	13 19 57.9	11.077	2	15 7 7.94	2.4200	20 46 30.7	7.007
3	13 20 45.59	2.1163	13 31 0.1	11.022	3	15 9 33.34	2.4267	20 53 27.6	6.888
4	13 22 52.74	2.1219	13 42 0.6	10.967	4	15 11 59.15	2.4335	21 0 17.3	6.768
5	13 25 0.22	2.1275	13 52 56.9	10.910	5	15 14 25.36	2.4402	21 6 59.8	6.647
6	13 27 8.04	2.1333	14 3 49.8	10.852	6	15 16 51.98	2.4469	21 13 34.9	6.523
7	13 29 16.21	2.1391	14 14 39.2	10.794	7	15 19 18.99	2.4535	21 20 2.6	6.398
8	13 31 24.73	2.1448	14 25 25.1	10.734	8	15 21 46.40	2.4602	21 26 22.7	6.272
9	13 33 33.59	2.1506	14 36 7.3	10.672	9	15 24 14.21	2.4668	21 32 35.2	6.144
10	13 35 42.80	2.1565	14 46 45.8	10.610	10	15 26 42.41	2.4733	21 38 40.0	6.015
11	13 37 52.37	2.1626	14 57 20.5	10.546	11	15 29 11.00	2.4797	21 44 37.0	5.884
12	13 40 2.31	2.1687	15 7 51.3	10.481	12	15 31 39.97	2.4861	21 50 26.1	5.759
13	13 42 12.61	2.1747	15 18 18.2	10.415	13	15 34 9.33	2.4925	21 56 7.3	5.629
14	13 44 23.27	2.1808	15 28 41.1	10.347	14	15 36 39.07	2.4988	22 1 40.5	5.495
15	13 46 34.30	2.1869	15 38 59.9	10.278	15	15 39 9.19	2.5051	22 7 5.5	5.349
16	13 48 45.70	2.1931	15 49 14.5	10.208	16	15 41 39.68	2.5113	22 12 22.3	5.212
17	13 50 57.47	2.1994	15 59 24.9	10.137	17	15 44 10.54	2.5175	22 17 30.9	5.074
18	13 53 9.62	2.2057	16 9 30.9	10.063	18	15 46 41.78	2.5237	22 22 31.2	4.934
19	13 55 22.15	2.2120	16 19 32.5	9.989	19	15 49 13.38	2.5299	22 27 23.0	4.792
20	13 57 35.06	2.2183	16 29 29.6	9.914	20	15 51 45.33	2.5365	22 32 6.3	4.650
21	13 59 48.35	2.2247	16 39 22.2	9.838	21	15 54 17.64	2.5414	22 36 41.0	4.508
22	14 2 2.03	2.2312	16 49 10.2	9.760	22	15 56 50.30	2.5479	22 41 7.0	4.361
23	14 4 16.10	2.2377	16 58 53.4	9.680	23	15 59 23.31	2.5530	22 45 24.3	4.215
24	14 6 30.56	2.2442	S. 17 8 31.8	9.599	24	16 1 56.66	2.5587	S. 22 49 32.8	4.067

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 25.					THURSDAY 27.				
0	16 1 56.66	2.5587	S. 22° 49' 32.8"	4.067	0	18 9 9.49	2.6905	S. 22° 57' 13.4"	3.952
1	16 4 30.35	2.5642	22 53 32.4	3.918	1	18 11 50.90	2.6897	22 53 11.1	4.194
2	16 7 4.37	2.5697	22 57 23.0	3.768	2	18 14 32.26	2.6889	22 48 58.5	4.997
3	16 9 38.71	2.5750	23 1 4.6	3.617	3	18 17 13.57	2.6879	22 44 35.5	4.468
4	16 12 13.37	2.5803	23 4 37.1	3.465	4	18 19 54.81	2.6868	22 40 2.3	4.639
5	16 14 48.35	2.5856	23 8 0.4	3.312	5	18 22 35.98	2.6855	22 35 18.8	4.810
6	16 17 23.65	2.5908	23 11 14.5	3.158	6	18 25 17.07	2.6840	22 30 25.1	4.980
7	16 19 59.25	2.5958	23 14 19.3	3.009	7	18 27 58.06	2.6824	22 25 21.2	5.149
8	16 22 35.14	2.6007	23 17 14.7	2.844	8	18 30 38.96	2.6807	22 20 7.2	5.318
9	16 25 11.33	2.6055	23 20 0.6	2.686	9	18 33 19.75	2.6789	22 14 43.1	5.486
10	16 27 47.80	2.6102	23 22 37.0	2.527	10	18 36 0.43	2.6769	22 9 8.9	5.652
11	16 30 24.55	2.6147	23 25 3.9	2.368	11	18 38 40.98	2.6747	22 3 24.8	5.818
12	16 33 1.57	2.6192	23 27 21.2	2.208	12	18 41 21.40	2.6725	21 57 30.7	5.984
13	16 35 38.85	2.6236	23 29 28.8	2.046	13	18 44 1.68	2.6703	21 51 26.7	6.148
14	16 38 16.40	2.6279	23 31 26.7	1.883	14	18 46 41.82	2.6677	21 45 12.9	6.312
15	16 40 54.20	2.6320	23 33 14.8	1.720	15	18 49 21.80	2.6650	21 38 49.2	6.476
16	16 43 32.24	2.6359	23 34 53.1	1.555	16	18 52 1.62	2.6623	21 32 15.8	6.633
17	16 46 10.51	2.6398	23 36 21.4	1.389	17	18 54 41.28	2.6595	21 25 32.7	6.798
18	16 48 49.02	2.6437	23 37 39.8	1.223	18	18 57 20.76	2.6565	21 18 40.0	6.958
19	16 51 27.75	2.6473	23 38 48.2	1.057	19	19 0 0.06	2.6534	21 11 37.7	7.117
20	16 54 6.69	2.6508	23 39 46.6	0.889	20	19 2 39.17	2.6509	21 4 26.0	7.273
21	16 56 45.84	2.6541	23 40 34.9	0.721	21	19 5 18.08	2.6483	20 57 4.9	7.429
22	16 59 25.18	2.6573	23 41 13.1	0.552	22	19 7 56.79	2.6454	20 49 34.5	7.584
23	17 2 4.71	2.6604	S. 23° 41' 41.1"	0.383	23	19 10 35.29	2.6398	S. 20° 41' 54.8"	7.738
WEDNESDAY 26.					FRIDAY 28.				
0	17 4 44.43	2.6634	S. 23° 41' 59.0"	0.213	0	19 13 13.57	2.6362	S. 20° 34' 5.9"	7.891
1	17 7 24.32	2.6662	23 42 6.7	-0.042	1	19 15 51.63	2.6325	20 26 7.9	8.042
2	17 10 4.37	2.6688	23 42 4.1	+0.130	2	19 18 29.47	2.6287	20 18 0.9	8.192
3	17 12 44.58	2.6714	23 41 51.1	0.302	3	19 21 7.08	2.6248	20 9 44.9	8.341
4	17 15 24.94	2.6738	23 41 27.8	0.474	4	19 23 44.45	2.6207	20 1 20.0	8.488
5	17 18 5.44	2.6760	23 40 54.2	0.646	5	19 26 21.57	2.6166	19 52 46.3	8.633
6	17 20 46.06	2.6780	23 40 10.3	0.818	6	19 28 58.44	2.6124	19 44 4.0	8.777
7	17 23 26.80	2.6800	23 39 16.0	0.992	7	19 31 35.06	2.6089	19 35 13.1	8.920
8	17 26 7.66	2.6819	23 38 11.3	1.166	8	19 34 11.42	2.6058	19 26 13.6	9.062
9	17 28 48.63	2.6836	23 36 56.1	1.340	9	19 36 47.52	2.6024	19 17 5.7	9.201
10	17 31 29.69	2.6851	23 35 30.5	1.514	10	19 39 23.35	2.5989	19 7 49.5	9.339
11	17 34 10.84	2.6864	23 33 54.4	1.688	11	19 41 58.91	2.5953	18 58 25.0	9.477
12	17 36 52.06	2.6876	23 32 7.9	1.862	12	19 44 34.19	2.5917	18 48 52.3	9.612
13	17 39 33.35	2.6887	23 30 10.9	2.037	13	19 47 9.19	2.5880	18 39 11.6	9.744
14	17 42 14.70	2.6896	23 28 3.4	2.212	14	19 49 43.91	2.5792	18 29 23.0	9.876
15	17 44 56.10	2.6903	23 25 45.5	2.386	15	19 52 18.34	2.5714	18 19 26.5	10.007
16	17 47 37.54	2.6910	23 23 17.1	2.561	16	19 54 52.48	2.5665	18 9 22.2	10.135
17	17 50 19.02	2.6915	23 20 38.2	2.736	17	19 57 26.32	2.5615	17 59 10.3	10.261
18	17 53 0.52	2.6917	23 17 48.8	2.910	18	19 59 59.86	2.5565	17 48 50.9	10.386
19	17 55 42.03	2.6919	23 14 49.0	3.084	19	20 2 33.10	2.5515	17 38 24.0	10.509
20	17 58 23.55	2.6919	23 11 38.7	3.258	20	20 5 6.04	2.5465	17 27 49.8	10.631
21	18 1 5.06	2.6917	23 8 18.0	3.432	21	20 7 38.68	2.5414	17 17 8.3	10.751
22	18 3 46.56	2.6915	23 4 46.8	3.606	22	20 10 11.01	2.5362	17 6 19.7	10.868
23	18 6 28.04	2.6911	23 1 5.3	3.779	23	20 12 43.02	2.5309	16 55 24.1	10.984
24	18 9 9.49	2.6905	S. 22° 57' 13.4"	3.952	24	20 15 14.72	2.5257	S. 16° 44' 21.6"	11.098

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 29.					MONDAY 31.				
0	20 15 14.72	2.5267	S. 16° 44' 21.6"	11.098	0	22 10 21.52	2.2765	S. 6° 16' 27.0"	14.397
1	20 17 46.10	2.5304	16 33 12.3	11.211	1	22 12 38.10	2.2741	6 2 6.7	14.349
2	20 20 17.17	2.5152	16 21 56.3	11.391	2	22 14 54.41	2.2697	5 47 45.1	14.309
3	20 22 47.92	2.5008	16 10 33.8	11.499	3	22 17 10.46	2.2654	5 33 22.4	14.387
4	20 25 18.35	2.5045	15 59 4.8	11.537	4	22 19 26.26	2.2613	5 18 58.7	14.403
5	20 27 48.46	2.4991	15 47 29.4	11.649	5	22 21 41.82	2.2579	5 4 34.0	14.417
6	20 30 18.24	2.4937	15 35 47.8	11.744	6	22 23 57.13	2.2539	4 50 8.6	14.439
7	20 32 47.70	2.4889	15 24 0.1	11.845	7	22 26 12.20	2.2499	4 35 42.5	14.441
8	20 35 16.83	2.4838	15 12 6.4	11.944	8	22 28 27.03	2.2459	4 21 15.7	14.451
9	20 37 45.64	2.4774	15 0 6.8	12.042	9	22 30 41.62	2.2413	4 6 48.4	14.458
10	20 40 14.12	2.4719	14 48 1.4	12.137	10	22 32 55.98	2.2374	3 52 20.7	14.464
11	20 42 42.27	2.4665	14 35 50.4	12.230	11	22 35 10.11	2.2336	3 37 52.7	14.468
12	20 45 10.10	2.4611	14 23 33.8	12.329	12	22 37 24.01	2.2296	3 23 24.5	14.471
13	20 47 37.60	2.4556	14 11 11.8	12.411	13	22 39 37.69	2.2259	3 8 56.2	14.479
14	20 50 4.77	2.4502	13 58 44.5	12.490	14	22 41 51.15	2.2226	2 54 27.8	14.479
15	20 52 31.62	2.4447	13 46 11.9	12.565	15	22 44 4.40	2.2191	2 39 59.5	14.470
16	20 54 58.14	2.4399	13 33 34.3	12.608	16	22 46 17.44	2.2154	2 25 31.4	14.467
17	20 57 24.33	2.4337	13 20 51.8	12.749	17	22 48 30.27	2.2121	2 11 3.5	14.468
18	20 59 50.19	2.4283	13 8 4.4	12.899	18	22 50 42.89	2.2087	1 56 35.9	14.456
19	21 2 15.73	2.4230	12 55 12.3	12.907	19	22 52 55.31	2.2053	1 42 8.8	14.447
20	21 4 40.95	2.4176	12 42 15.6	12.983	20	22 55 7.53	2.2021	1 27 42.2	14.437
21	21 7 5.84	2.4123	12 29 14.4	13.057	21	22 57 19.56	2.1989	1 13 16.3	14.436
22	21 9 30.41	2.4068	12 16 8.8	13.198	22	22 59 31.40	2.1958	0 58 51.1	14.414
23	21 11 54.66	2.4015	S. 12° 2' 59.0"	13.198	23	23 1 43.06	2.1927	S. 0° 44' 26.6"	14.109
SUNDAY 30.					TUESDAY, FEBRUARY 1.				
0	21 14 18.59	2.3992	S. 11° 49' 45.0"	13.267	0	23 3 54.53	2.1897	S. 0° 30' 2.9"	14.387
1	21 16 42.20	2.3908	11 36 27.0	13.333	PHASES OF THE MOON.				
2	21 19 5.49	2.3856	11 23 5.1	13.397					
3	21 21 28.47	2.3803	11 9 39.4	13.469					
4	21 23 51.13	2.3751	10 56 10.0	13.519					
5	21 26 13.48	2.3698	10 42 37.1	13.577	☾ First Quarter, . . . 6 20 9.1 ○ Full Moon, . . . 14 23 33.8 ☾ Last Quarter, . . . 22 20 48.0 ● New Moon, . . . 29 12 48.2				
6	21 28 35.51	2.3646	10 29 0.7	13.634					
7	21 30 57.23	2.3595	10 15 21.0	13.688					
8	21 33 18.65	2.3545	10 1 38.1	13.741					
9	21 35 39.77	2.3494	9 47 52.1	13.792	☾ Apogee, 13 16.0 ☾ Perigee, 28 16.3				
10	21 38 0.58	2.3443	9 34 3.1	13.841					
11	21 40 21.09	2.3394	9 20 11.2	13.887					
12	21 42 41.31	2.3345	9 6 16.6	13.932					
13	21 45 1.23	2.3295	8 52 19.4	13.975					
14	21 47 20.85	2.3246	8 38 19.6	14.017					
15	21 49 40.18	2.3196	8 24 17.4	14.056					
16	21 51 59.22	2.3150	8 10 12.9	14.093					
17	21 54 17.96	2.3103	7 56 6.2	14.129					
18	21 56 36.46	2.3056	7 41 57.4	14.163					
19	21 58 54.65	2.3009	7 27 46.6	14.195					
20	22 1 12.57	2.2969	7 13 34.0	14.225					
21	22 3 30.21	2.2917	6 59 19.6	14.253					
22	22 5 47.58	2.2879	6 45 3.6	14.280					
23	22 8 4.68	2.2838	6 30 46.0	14.305					
24	22 10 21.52	2.2785	S. 6° 16' 27.0"	14.327					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
2	Sun W.	27 22 22	9357	29 6 58	9370	30 51 16	9394	32 35 14	9398
	Jupiter E.	61 44 5	9113	59 53 25	9196	58 3 5	9140	56 13 7	9155
	Saturn E.	72 56 21	9099	71 5 10	9105	69 14 19	9119	67 23 49	9134
	α Arietis E.	85 59 10	9071	84 7 26	9083	82 16 1	9086	80 24 56	9109
3	Sun W.	41 9 48	9477	42 51 34	9494	44 32 56	9511	46 13 54	9529
	Jupiter E.	47 9 23	9243	45 21 59	9269	43 35 4	9263	41 48 39	9304
	Saturn E.	58 17 11	9216	56 29 7	9235	54 41 31	9253	52 54 23	9273
	α Arietis E.	71 14 58	9186	69 26 10	9202	67 37 46	9200	65 49 48	9237
	Aldebaran E.	104 10 24	9197	102 21 52	9213	100 33 43	9229	98 45 58	9245
4	Sun W.	54 32 19	9694	56 10 41	9644	57 48 36	9653	59 26 5	9664
	Jupiter E.	33 4 52	9497	31 21 56	9455	29 39 40	9486	27 58 7	9520
	Saturn E.	44 6 13	9281	42 22 11	9404	40 38 42	9489	38 55 48	9454
	α Arietis E.	56 56 41	9231	55 11 27	9251	53 26 42	9271	51 42 26	9291
	Aldebaran E.	89 53 29	9233	88 8 17	9251	86 23 32	9270	84 39 14	9289
5	Sun W.	67 26 46	9784	69 1 35	9805	70 35 57	9825	72 9 53	9844
	Venus W.	26 17 45	9966	27 48 40	9975	29 19 24	9985	30 49 55	9997
	α Arietis E.	43 8 27	9497	41 27 9	9519	39 46 22	9542	38 6 7	9565
	Aldebaran E.	76 4 26	9484	74 22 50	9502	72 41 40	9529	71 0 57	9541
6	Sun W.	79 53 14	9942	81 24 40	9961	82 55 42	9979	84 26 21	9997
	Fomalhaut W.	42 31 11	3798	43 47 28	3678	45 4 38	3636	46 22 33	3599
	Venus W.	38 18 34	3066	39 47 25	3081	41 15 58	3086	42 44 12	3112
	Aldebaran E.	62 43 59	9636	61 5 53	9655	59 28 13	9674	57 50 58	9692
	Pollux E.	104 33 35	9647	102 55 44	9664	101 18 16	9681	99 41 10	9697
7	Sun W.	91 53 59	3086	93 22 26	3102	94 50 33	3118	96 18 21	3133
	Fomalhaut W.	53 0 32	3480	54 21 19	3464	55 42 23	3452	57 3 41	3442
	Venus W.	50 0 40	3189	51 27 2	3204	52 53 7	3219	54 18 54	3233
	α Pegasi W.	30 27 13	3973	31 51 56	3942	33 17 16	3916	34 43 6	3195
	Aldebaran E.	49 50 54	9785	48 16 6	9802	46 41 41	9821	45 7 40	9840
	Pollux E.	91 41 3	9776	90 6 4	9792	88 31 25	9806	86 57 5	9821
8	Sun W.	103 32 41	3206	104 58 41	3222	106 24 24	3235	107 49 52	3247
	Fomalhaut W.	63 52 23	3415	65 14 23	3413	66 36 25	3412	67 58 28	3411
	Venus W.	61 23 37	3302	62 47 46	3315	64 11 40	3298	65 35 19	3240
	α Pegasi W.	41 57 6	3139	43 24 28	3135	44 51 55	3132	46 19 26	3130
	Jupiter W.	21 4 51	3080	22 33 25	3068	24 2 14	3060	25 31 13	3056
	Aldebaran E.	37 23 38	2934	35 52 2	2954	34 20 52	2975	32 50 8	2996
	Pollux E.	79 10 5	2891	77 37 34	2904	76 5 20	2916	74 33 22	2929
9	Sun W.	114 53 34	3306	116 17 38	3317	117 41 30	3326	119 5 11	3336
	Fomalhaut W.	74 48 34	3419	76 10 29	3423	77 32 20	3426	78 54 7	3430
	Venus W.	72 30 14	3395	73 52 36	3406	75 14 46	3415	76 36 45	3424
	α Pegasi W.	53 37 13	3133	55 4 43	3134	56 32 11	3137	57 59 36	3138
	Jupiter W.	32 56 47	3056	34 25 50	3060	35 54 49	3063	37 23 44	3067
	Saturn W.	22 51 3	3167	24 17 52	3151	25 45 0	3138	27 12 23	3129
	Pollux E.	66 57 24	2988	65 26 56	2999	63 56 42	3009	62 26 41	3021
	Regulus E.	103 44 30	2944	102 13 7	2954	100 41 56	2962	99 10 56	2970
10	Fomalhaut W.	85 41 54	3453	87 3 11	3458	88 24 22	3463	89 45 27	3470

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
2	Sun W.	34 18 52	9419	36 2 9	9497	37 45 5	9443	39 27 38	9460
	Jupiter E.	54 23 32	9171	52 34 21	9188	50 45 35	9205	48 57 15	9224
	Saturn E.	65 33 42	9149	63 43 58	9165	61 54 37	9181	60 5 41	9198
	α Arietis E.	78 34 11	9194	76 43 48	9130	74 53 48	9154	73 4 11	9170
3	Sun W.	47 54 27	9548	49 34 34	9566	51 14 15	9585	52 53 30	9604
	Jupiter E.	40 2 46	9397	38 17 26	9350	36 32 39	9374	34 48 27	9400
	Saturn E.	51 7 44	9394	49 21 35	9314	47 35 56	9335	45 50 48	9358
	α Arietis E.	64 2 16	9256	62 15 11	9274	60 28 33	9293	58 42 23	9319
	Aldebaran E.	96 58 37	9262	95 11 41	9279	93 25 11	9297	91 39 7	9315
4	Sun W.	61 3 7	9704	62 39 42	9734	64 15 50	9744	65 51 31	9764
	Jupiter E.	26 17 21	9556	24 37 25	9596	22 58 24	9640	21 20 24	9692
	Saturn E.	37 13 30	9481	35 31 50	9509	33 50 49	9538	32 10 28	9568
	α Arietis E.	49 58 39	9419	48 15 21	9433	46 32 33	9454	44 50 15	9475
	Aldebaran E.	82 55 22	9407	81 11 57	9436	79 28 59	9445	77 46 29	9465
5	Sun W.	73 43 24	9864	75 16 29	9883	76 49 9	9903	78 21 24	9923
	Venus W.	32 20 11	3009	33 50 12	3022	35 19 57	3037	36 49 24	3051
	α Arietis E.	36 26 24	9588	34 47 13	9619	33 8 34	9637	31 30 29	9663
	Aldebaran E.	69 20 41	9560	67 40 51	9590	66 1 28	9599	64 22 31	9617
6	Sun W.	85 56 37	3016	87 26 30	3034	88 56 1	3051	90 25 11	3069
	Fomalhaut W.	47 41 8	3567	49 0 18	3540	50 19 58	3516	51 40 4	3497
	Venus W.	44 12 7	3128	45 39 43	3143	47 7 1	3158	48 34 0	3174
	Aldebaran E.	56 14 8	9711	54 37 43	9739	53 1 42	9748	51 26 6	9766
	Pollux E.	98 4 26	9713	96 28 4	9739	94 52 3	9745	93 16 23	9760
7	Sun W.	97 45 50	3150	99 12 59	3165	100 39 50	3179	102 6 24	3193
	Fomalhaut W.	58 25 10	3434	59 46 48	3437	61 8 34	3422	62 30 26	3417
	Venus W.	55 44 24	3947	57 9 37	3903	58 34 33	3876	59 59 13	3929
	α Pegasi W.	36 9 21	3178	37 35 57	3165	39 2 48	3154	40 29 52	3146
	Aldebaran E.	43 34 4	9859	42 0 52	9876	40 28 3	9895	38 55 38	9915
	Pollux E.	85 23 4	9835	83 49 22	9850	82 15 59	9863	80 42 53	9877
8	Sun W.	109 15 5	3900	110 40 3	3972	112 4 47	3984	113 29 17	3995
	Fomalhaut W.	69 20 32	3419	70 42 35	3413	72 4 37	3415	73 26 37	3417
	Venus W.	66 58 44	3352	68 21 55	3363	69 44 54	3374	71 7 40	3385
	α Pegasi W.	47 46 59	3199	49 14 33	3199	50 42 7	3199	52 9 41	3131
	Jupiter W.	27 0 17	3063	28 29 24	3062	29 58 33	3059	31 27 41	3054
	Aldebaran E.	31 19 50	3018	29 50 0	3043	28 20 41	3070	26 51 55	3100
	Pollux E.	73 1 40	9941	71 30 13	9954	69 59 2	9965	68 28 6	9977
9	Sun W.	120 28 41	3345	121 52 0	3355	123 15 8	3364	124 38 6	3372
	Fomalhaut W.	80 15 50	3434	81 37 28	3438	82 59 2	3449	84 20 31	3447
	Venus W.	77 58 34	3434	79 20 12	3449	80 41 41	3450	82 3 1	3458
	α Pegasi W.	59 26 59	3141	60 54 19	3144	62 21 35	3148	63 48 47	3151
	Jupiter W.	38 52 34	3071	40 21 19	3075	41 49 59	3079	43 18 34	3084
	Saturn W.	28 39 58	3122	30 7 41	3118	31 35 29	3114	33 3 22	3112
	Pollux E.	60 56 54	3030	59 27 19	3041	57 57 57	3051	56 28 47	3061
	Regulus E.	97 40 6	9978	96 9 26	9987	94 38 57	9995	93 8 38	3002
10	Fomalhaut W.	91 6 25	3476	92 27 16	3482	93 48 0	3488	95 8 37	3495

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dif.	IIIh.	P. L. of Dif.	VIh.	P. L. of Dif.	IXh.	P. L. of Dif.
10	Venus W.	83 24 12	3465	84 45 15	3473	86 6 9	3480	87 26 56	3488
	α Pegasi W.	65 15 55	3153	66 43 0	3157	68 10 1	3160	69 36 58	3163
	Jupiter W.	44 47 3	3088	46 15 27	3092	47 43 46	3097	49 11 59	3101
	Saturn W.	34 31 17	3110	35 59 14	3110	37 27 12	3110	38 55 10	3110
	α Arietis W.	21 37 49	3153	23 4 54	3141	24 32 14	3138	25 59 45	3135
	Pollux E.	54 59 50	3071	53 31 5	3080	52 2 31	3080	50 34 9	3100
	Regulus E.	91 38 28	3000	90 8 26	3015	88 38 32	3029	87 8 46	3038
11	Fomalhaut W.	96 29 7	3509	97 49 29	3510	99 9 42	3517	100 29 47	3525
	Venus W.	94 9 12	3513	95 29 22	3518	96 49 26	3522	98 9 26	3526
	α Pegasi W.	76 50 53	3177	78 17 30	3179	79 44 4	3182	81 10 35	3184
	Jupiter W.	56 31 59	3119	57 59 46	3121	59 27 30	3124	60 55 10	3127
	Saturn W.	46 14 51	3114	47 42 44	3115	49 10 35	3116	50 38 25	3117
	α Arietis W.	33 18 52	3108	34 46 52	3107	36 14 53	3107	37 42 54	3107
	Pollux E.	43 15 21	3151	41 48 13	3169	40 21 18	3173	38 54 36	3184
12	Regulus E.	79 41 42	3053	78 12 35	3058	76 43 34	3061	75 14 37	3065
	α Pegasi W.	88 22 28	3195	89 48 43	3197	91 14 56	3199	92 41 6	3201
	Jupiter W.	68 12 48	3137	69 40 13	3138	71 7 36	3140	72 34 57	3141
	Saturn W.	57 57 18	3129	59 25 1	3129	60 52 44	3123	62 20 26	3123
	α Arietis W.	45 3 7	3105	46 31 10	3105	47 59 14	3105	49 27 18	3104
	Pollux E.	31 45 4	3092	30 20 8	3099	28 55 35	3105	27 31 29	3122
	Regulus E.	67 50 58	3081	66 22 25	3083	64 53 55	3085	63 25 27	3087
13	Jupiter W.	79 51 27	3144	81 18 43	3144	82 45 59	3144	84 13 15	3143
	Saturn W.	69 38 55	3129	71 6 37	3129	72 34 20	3129	74 2 3	3121
	α Arietis W.	56 47 45	3109	58 15 52	3101	59 44 0	3101	61 12 9	3099
	Aldebaran W.	24 28 41	3086	25 53 32	3047	27 18 46	3030	28 44 20	3214
	Regulus E.	56 3 42	3095	54 35 26	3096	53 7 12	3097	51 38 59	3098
	Spica E.	110 1 32	3075	108 32 52	3076	107 4 13	3076	105 35 34	3075
14	Saturn W.	81 20 54	3116	82 48 44	3114	84 16 36	3113	85 44 30	3112
	α Arietis W.	68 33 16	3093	70 1 34	3091	71 29 55	3089	72 58 18	3087
	Aldebaran W.	35 55 53	3164	37 22 45	3156	38 49 47	3149	40 16 57	3143
	Regulus E.	44 18 9	3109	42 50 2	3103	41 21 56	3104	39 53 51	3105
	Spica E.	98 12 6	3079	96 43 24	3070	95 14 38	3069	93 45 50	3068
15	α Arietis W.	80 20 48	3077	81 49 26	3074	83 18 7	3071	84 46 52	3068
	Aldebaran W.	47 34 38	3114	49 2 30	3110	50 30 28	3105	51 58 32	3099
	Regulus E.	32 33 51	3114	31 5 58	3117	29 38 9	3121	28 10 25	3125
	Spica E.	86 21 22	3058	84 52 21	3056	83 23 17	3053	81 54 10	3050
16	α Arietis W.	92 11 31	3053	93 40 38	3049	95 9 50	3046	96 39 6	3043
	Aldebaran W.	59 20 24	3075	60 49 4	3070	62 17 50	3065	63 46 42	3061
	Spica E.	74 27 41	3035	72 58 12	3031	71 28 38	3028	69 59 0	3025
17	Aldebaran W.	71 12 33	3034	72 42 3	3030	74 11 30	3024	75 41 22	3018
	Pollux W.	30 0 23	3009	31 26 30	3180	32 53 3	3161	34 19 59	3143
	Spica E.	62 29 38	3003	60 59 29	2999	59 29 15	2994	57 58 55	2989
	Antares E.	108 1 25	3003	106 31 16	2998	105 1 1	2993	103 30 40	2989
18	Aldebaran W.	83 11 47	2988	84 42 15	2981	86 12 51	2975	87 43 35	2969
	Pollux W.	41 39 37	3069	43 8 24	3056	44 37 27	3044	46 6 45	3038

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LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
10	Venus W.	88° 47' 36"	3493	90° 8' 9"	3497	91° 28' 36"	3503	92° 48' 57"	3508
	α Pegasi W.	71 3 52	3166	72 30 42	3168	73 57 29	3171	75 24 13	3174
	Jupiter W.	50 40 8	3105	52 8 12	3108	53 36 12	3111	55 4 8	3115
	Saturn W.	40 23 8	3110	41 51 5	3110	43 19 2	3119	44 46 57	3113
	α Arietis W.	27 27 24	3119	28 55 10	3115	30 23 1	3113	31 50 55	3110
	Pollux E.	49 5 59	3110	47 38 1	3119	46 10 15	3130	44 42 42	3140
	Regulus E.	85 39 8	3034	84 9 37	3039	82 40 12	3044	81 10 54	3049
11	Fomalhaut W.	101 49 43	3535	103 9 29	3543	104 29 6	3552	105 48 33	3562
	Venus W.	99 29 21	3530	100 49 12	3533	102 9 0	3535	103 28 45	3539
	α Pegasi W.	82 37 3	3187	84 3 28	3189	85 29 50	3191	86 56 10	3193
	Jupiter W.	62 22 47	3129	63 50 21	3132	65 17 52	3133	66 45 21	3135
	Saturn W.	52 6 14	3118	53 34 2	3119	55 1 49	3190	56 29 34	3191
	α Arietis W.	39 10 55	3106	40 38 57	3105	42 7 0	3105	43 35 3	3105
	Pollux E.	37 28 8	3198	36 1 56	3211	34 36 0	3226	33 10 22	3243
12	Regulus E.	73 45 45	3069	72 16 58	3073	70 48 15	3075	69 19 35	3078
	α Pegasi W.	94 7 14	3203	95 33 20	3204	96 59 24	3206	98 25 26	3207
	Jupiter W.	74 2 17	3143	75 29 36	3143	76 56 54	3143	78 24 11	3144
	Saturn W.	63 48 8	3124	65 15 49	3123	66 43 31	3123	68 11 13	3123
	α Arietis W.	50 55 23	3104	52 23 28	3104	53 51 33	3103	55 19 39	3103
	Pollux E.	26 7 54	3369	24 44 54	3386	23 22 35	3441	22 1 5	3495
	Regulus E.	61 57 2	3089	60 28 39	3091	59 0 18	3092	57 31 59	3094
13	Jupiter W.	85 40 32	3143	87 7 49	3143	88 35 6	3143	90 2 24	3142
	Saturn W.	75 29 47	3120	76 57 32	3119	78 25 18	3119	79 53 5	3117
	α Arietis W.	62 40 20	3098	64 8 32	3097	65 36 45	3096	67 5 0	3095
	Aldebaran W.	30 10 12	3209	31 36 19	3191	33 2 39	3181	34 29 11	3173
	Regulus E.	50 10 47	3089	48 42 36	3100	47 14 26	3101	45 46 17	3101
	Spica E.	104 6 54	3075	102 38 14	3074	101 9 33	3073	99 40 51	3073
	Saturn W.	87 12 25	3110	88 40 22	3108	90 8 22	3106	91 36 24	3104
14	α Arietis W.	74 26 43	3085	75 55 11	3083	77 23 41	3082	78 52 13	3079
	Aldebaran W.	41 44 15	3136	43 11 41	3130	44 39 14	3125	46 6 53	3120
	Regulus E.	38 25 48	3106	36 57 46	3108	35 29 46	3109	34 1 47	3111
	Spica E.	92 17 1	3066	90 48 10	3064	89 19 16	3062	87 50 20	3060
	α Arietis W.	86 15 41	3065	87 44 33	3062	89 13 29	3060	90 42 28	3056
	Aldebaran W.	53 26 43	3094	54 55 0	3090	56 23 22	3085	57 51 50	3080
	Regulus E.	26 42 46	3131	25 15 14	3138	23 47 51	3148	22 20 39	3160
15	Spica E.	80 24 59	3047	78 55 45	3044	77 26 27	3042	75 57 6	3039
	α Arietis W.	98 8 26	3039	99 37 51	3034	101 7 21	3030	102 36 56	3026
	Aldebaran W.	65 15 39	3056	66 44 42	3051	68 13 52	3045	69 43 9	3039
	Spica E.	68 29 18	3021	66 59 31	3017	65 29 39	3019	63 59 41	3008
	Aldebaran W.	77 11 12	3013	78 41 9	3008	80 11 14	3000	81 41 27	2994
	Pollux E.	35 47 17	3196	37 14 55	3110	38 42 52	3098	40 11 6	3088
	Spica E.	56 28 28	2984	54 57 55	2979	53 27 16	2973	51 56 30	2968
16	Antares E.	102 0 13	2963	100 29 39	2977	98 58 58	2971	97 28 9	2965
	Aldebaran W.	89 14 27	2962	90 45 28	2954	92 16 38	2946	93 47 58	2939
	Pollux W.	47 36 18	3021	49 6 5	3009	50 36 6	2998	52 6 21	2987
	Aldebaran W.	77 11 12	3013	78 41 9	3008	80 11 14	3000	81 41 27	2994
	Pollux W.	35 47 17	3196	37 14 55	3110	38 42 52	3098	40 11 6	3088
	Spica E.	56 28 28	2984	54 57 55	2979	53 27 16	2973	51 56 30	2968
	Antares E.	102 0 13	2963	100 29 39	2977	98 58 58	2971	97 28 9	2965
17	Aldebaran W.	89 14 27	2962	90 45 28	2954	92 16 38	2946	93 47 58	2939
	Pollux W.	47 36 18	3021	49 6 5	3009	50 36 6	2998	52 6 21	2987
18	Aldebaran W.	89 14 27	2962	90 45 28	2954	92 16 38	2946	93 47 58	2939
	Pollux W.	47 36 18	3021	49 6 5	3009	50 36 6	2998	52 6 21	2987

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Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	III ^h .	P. L. of Diff.	VI ^h .	P. L. of Diff.	IX ^h .	P. L. of Diff.
18	Spica	E.	50 25 37	2993	48 54 36	2956	47 23 28	2950	45 52 12	2944
	Antares	E.	95 57 12	2959	94 26 8	2953	92 54 56	2946	91 23 36	2940
19	Aldebaran	W.	95 19 28	2931	96 51 7	2994	98 22 56	2916	99 54 55	2908
	Pollux	W.	53 36 50	2976	55 7 33	2965	56 38 29	2954	58 9 39	2943
	Spica	E.	38 13 53	2910	36 41 47	2903	35 9 32	2896	33 37 8	2888
	Antares	E.	83 44 44	2903	82 12 29	2895	80 40 4	2887	79 7 29	2878
	SUN	E.	135 23 50	2979	133 59 14	2970	132 34 28	2962	131 9 32	2953
20	Pollux	W.	65 48 50	2887	67 21 34	2878	68 54 23	2865	70 27 27	2852
	Regulus	W.	28 47 9	2894	30 19 35	2879	31 52 21	2864	33 25 26	2849
	Antares	E.	71 21 39	2839	69 47 53	2832	68 13 54	2819	66 39 42	2801
	SUN	E.	124 1 56	2900	122 35 47	2189	121 9 25	2178	119 42 49	2167
21	Pollux	W.	78 16 41	2792	79 51 20	2779	81 26 15	2766	83 1 27	2753
	Regulus	W.	41 15 41	2775	42 50 42	2761	44 26 1	2747	46 1 39	2732
	Antares	E.	58 45 8	2746	57 9 29	2734	55 33 34	2722	53 57 23	2709
	SUN	E.	112 26 14	2105	110 58 10	2091	109 29 49	2077	108 1 11	2063
22	Pollux	W.	91 1 53	2686	92 38 52	2673	94 16 10	2657	95 53 48	2649
	Regulus	W.	54 4 39	2658	55 42 15	2643	57 20 11	2628	58 58 28	2618
	Antares	E.	45 52 12	2644	44 14 17	2631	42 36 4	2617	40 57 32	2604
	Mars	E.	73 56 26	2686	72 23 52	2673	70 50 59	2658	69 17 46	2649
	SUN	E.	100 33 40	2690	99 3 15	2675	97 32 31	2659	96 1 27	2643
23	Pollux	W.	104 6 51	2570	105 46 27	2555	107 26 24	2540	109 6 41	2526
	Regulus	W.	67 15 12	2534	68 55 38	2517	70 36 27	2502	72 17 38	2485
	Antares	E.	32 40 10	2534	30 59 44	2521	29 19 0	2507	27 37 57	2494
	Mars	E.	61 26 37	2763	59 51 20	2747	58 15 42	2730	56 39 42	2713
	SUN	E.	88 21 3	2861	86 47 54	2845	85 14 24	2828	83 40 33	2811
24	Regulus	W.	80 49 19	2403	82 32 49	2387	84 16 42	2371	86 0 58	2355
	Spica	W.	26 46 29	2408	28 29 52	2389	30 13 42	2371	31 57 58	2354
	Mars	E.	48 34 5	2699	46 55 49	2612	45 17 11	2596	43 38 10	2579
	SUN	E.	75 45 40	2735	74 9 33	2707	72 33 3	2680	70 56 10	2672
25	Regulus	W.	94 48 12	2275	96 34 48	2260	98 21 46	2245	100 9 6	2230
	Spica	W.	40 45 36	2269	42 32 21	2253	44 19 30	2237	46 7 2	2221
	Mars	E.	35 17 21	2497	33 36 4	2489	31 54 25	2466	30 12 24	2452
	SUN	E.	62 45 58	2588	61 6 47	2572	59 27 14	2557	57 47 20	2542
26	Regulus	W.	109 11 12	2161	111 0 38	2149	112 50 23	2136	114 40 27	2125
	Spica	W.	55 10 24	2149	57 0 9	2136	58 50 14	2123	60 40 38	2111
	SUN	E.	49 22 32	2468	47 40 34	2455	45 58 18	2443	44 15 44	2431
27	Spica	W.	69 57 7	2057	71 49 13	2048	73 41 33	2039	75 34 6	2031
	Antares	W.	24 30 15	2089	26 21 42	2069	28 13 29	2057	30 5 34	2047
	SUN	E.	35 38 59	2382	33 54 58	2375	32 10 47	2369	30 26 28	2364
31	SUN	W.	20 59 27	2494	22 40 49	2500	24 22 2	2509	26 3 3	2519
	Saturn	E.	51 33 38	2135	49 45 3	2219	47 56 54	2230	46 9 11	2249
	α Arietis	E.	63 19 11	2152	61 29 31	2167	59 40 13	2182	57 51 18	2198
	Aldebaran	E.	96 14 22	2155	94 24 47	2169	92 35 32	2189	90 46 38	2197

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Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
18	Spica E.		44° 20' 49"	2938	42° 49' 18"	2931	41° 17' 38"	2924	39° 45' 50"	2917
	Antares E.		89 52 8	2933	88 20 31	2926	86 48 45	2919	85 16 49	2911
19	Aldebaran W.		101 27 4	2939	102 59 24	2931	104 31 55	2931	106 4 38	2932
	Pollux W.		59 41 3	2932	61 12 41	2921	62 44 33	2910	64 16 39	2902
	Spica E.		32 4 34	2981	30 31 51	2973	28 58 58	2966	27 25 56	2959
	Antares E.		77 34 42	2969	76 1 43	2960	74 28 33	2952	72 55 12	2942
	Sun E.		129 44 25	2949	128 19 6	2939	126 53 35	2929	125 27 52	2911
20	Pollux W.		72 0 47	2941	73 34 22	2939	75 8 12	2917	76 42 18	2904
	Regulus W.		34 58 50	2934	36 32 34	2919	38 6 37	2905	39 40 59	2789
	Antares E.		65 5 16	2791	63 30 36	2779	61 55 41	2769	60 20 32	2757
	Sun E.		118 16 0	3154	116 48 56	3142	115 21 37	3139	113 54 3	3117
21	Pollux W.		84 36 57	2740	86 12 44	2736	87 48 49	2713	89 25 12	2699
	Regulus W.		47 37 36	2717	49 13 53	2703	50 50 29	2689	52 27 24	2674
	Antares E.		52 20 55	2686	50 44 10	2684	49 7 8	2671	47 29 49	2657
	Sun E.		106 32 16	3049	105 3 4	3034	103 33 34	3020	102 3 46	3005
22	Pollux W.		97 31 46	2638	99 10 3	2614	100 48 39	2599	102 27 35	2585
	Regulus W.		60 37 6	2597	62 16 5	2581	63 55 26	2566	65 35 8	2550
	Antares E.		39 18 42	2590	37 39 33	2576	36 0 5	2561	34 20 17	2548
	Mars E.		67 44 13	2937	66 10 20	2911	64 36 7	2795	63 1 33	2779
	Sun E.		94 30 3	2927	92 58 19	2912	91 26 15	2905	89 53 50	2878
23	Pollux W.		110 47 18	2511	112 28 16	2497	114 9 34	2482	115 51 12	2467
	Regulus W.		73 59 12	2469	75 41 9	2453	77 23 29	2436	79 6 12	2419
	Antares E.		25 56 35	2439	24 14 56	2470	22 33 0	2459	20 50 49	2450
	Mars E.		55 3 20	2906	53 26 35	2980	51 49 28	2963	50 11 58	2946
	Sun E.		82 6 20	2794	80 31 44	2776	78 56 45	2760	77 21 24	2742
24	Regulus W.		87 45 38	2338	89 30 42	2323	91 16 9	2307	93 1 59	2291
	Spica W.		33 42 39	2336	35 27 46	2319	37 13 18	2309	38 59 15	2285
	Mars E.		41 58 46	2542	40 18 59	2545	38 38 49	2529	36 58 16	2513
	Sun E.		69 18 53	2955	67 41 13	2939	66 3 11	2922	64 24 46	2905
25	Regulus W.		101 56 49	2915	103 44 54	2901	105 33 20	2188	107 22 6	2174
	Spica W.		47 54 58	2906	49 43 17	2191	51 31 58	2177	53 21 0	2163
	Mars E.		28 30 3	2437	26 47 21	2423	25 4 19	2410	23 20 59	2398
	Sun E.		56 7 5	2526	54 26 28	2511	52 45 30	2496	51 4 11	2482
26	Regulus W.		116 30 48	2114	118 21 26	2103	120 12 20	2094	122 3 29	2085
	Spica W.		62 31 20	2099	64 22 21	2087	66 13 40	2076	68 5 16	2066
	Sun E.		42 32 53	2419	40 49 46	2409	39 6 24	2399	37 22 48	2390
27	Spica W.		77 26 52	2094	79 19 49	2018	81 12 55	2012	83 6 10	2007
	Antares W.		31 57 55	2036	33 50 30	2030	35 43 17	2023	37 36 15	2017
	Sun E.		28 42 2	2361	26 57 31	2359	25 12 58	2359	23 28 25	2361
31	Sun W.		27 43 50	2531	29 24 20	2545	31 4 31	2559	32 44 23	2574
	Saturn E.		44 21 56	2968	42 35 10	2989	40 48 54	2910	39 3 9	2933
	♌ Arietis E.		56 2 47	2914	54 14 41	2939	52 27 1	2950	50 39 48	2968
	Aldebaran E.		88 58 6	2912	87 9 57	2926	85 22 11	2945	83 34 50	2961

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sideral Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.			
Tues.	1	^h 21 ^m 1 ^s 14.55	10.175	S. 16° 58' 4.9"	+43.08	16 15.93	68.21	^m 13 ^s 53.18	0.318
Wed.	2	21 5 18.35	10.141	16 40 42.4	43.80	16 15.78	68.10	14 0.40	0.284
Thur.	3	21 9 21.31	10.105	16 23 2.6	44.51	16 15.63	67.98	14 6.79	0.249
Frid.	4	21 13 23.43	10.071	16 5 5.8	45.20	16 15.47	67.87	14 12.34	0.215
Sat.	5	21 17 24.71	10.036	15 46 52.6	45.89	16 15.31	67.75	14 17.06	0.180
Sun.	6	21 21 25.17	10.001	15 28 23.3	46.56	16 15.16	67.64	14 20.95	0.145
Mon.	7	21 25 24.80	9.967	15 9 38.3	47.20	16 14.99	67.52	14 24.02	0.111
Tues.	8	21 29 23.62	9.933	14 50 38.1	47.82	16 14.82	67.41	14 26.27	0.077
Wed.	9	21 33 21.62	9.900	14 31 23.1	48.44	16 14.64	67.30	14 27.72	0.044
Thur.	10	21 37 18.82	9.867	14 11 53.6	49.02	16 14.46	67.19	14 28.38	0.011
Frid.	11	21 41 15.24	9.835	13 52 10.2	49.60	16 14.27	67.08	14 28.24	0.021
Sat.	12	21 45 10.88	9.803	13 32 13.2	50.16	16 14.08	66.97	14 27.32	0.053
Sun.	13	21 49 5.76	9.771	13 12 2.8	50.71	16 13.88	66.87	14 25.65	0.084
Mon.	14	21 52 59.90	9.739	12 51 39.6	51.23	16 13.68	66.76	14 23.23	0.116
Tues.	15	21 56 53.30	9.709	12 31 4.0	51.74	16 13.48	66.66	14 20.09	0.146
Wed.	16	22 0 45.97	9.680	12 10 16.2	52.23	16 13.28	66.56	14 16.23	0.175
Thur.	17	22 4 37.94	9.651	11 49 16.9	52.71	16 13.06	66.46	14 11.67	0.204
Frid.	18	22 8 29.23	9.623	11 28 6.1	53.18	16 12.84	66.36	14 6.42	0.232
Sat.	19	22 12 19.85	9.596	11 6 44.6	53.62	16 12.62	66.26	14 0.50	0.259
Sun.	20	22 16 9.82	9.569	10 45 12.5	54.04	16 12.39	66.16	13 53.93	0.286
Mon.	21	22 19 59.16	9.542	10 23 30.4	54.46	16 12.16	66.07	13 46.73	0.313
Tues.	22	22 23 47.88	9.517	10 1 38.7	54.85	16 11.93	65.98	13 38.91	0.338
Wed.	23	22 27 35.99	9.492	9 39 37.7	55.23	16 11.70	65.89	13 30.48	0.363
Thur.	24	22 31 23.51	9.468	9 17 27.9	55.60	16 11.47	65.80	13 21.48	0.387
Frid.	25	22 35 10.45	9.445	8 55 9.7	55.93	16 11.23	65.72	13 11.90	0.410
Sat.	26	22 38 56.83	9.422	8 32 43.6	56.26	16 10.99	65.65	13 1.75	0.433
Sun.	27	22 42 42.67	9.399	8 10 9.9	56.56	16 10.75	65.55	12 51.06	0.456
Mon.	28	22 46 27.97	9.378	7 47 28.9	56.84	16 10.51	65.46	12 39.84	0.479
Tues.	29	22 50 12.75	9.355	S. 7 24 41.3	+57.11	16 10.27	65.39	12 28.10	0.500

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sideral Time.

+ prefixed to the hourly change of declination indicates that the south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be subtracted from Mean Time.	Diff. for 1 hour.	Sidereal Time, or Right Ascension of Mean Sun
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
Tues.	1	^h 21 ^m 1 ^s 12.18	10.174	S. 16° 58' 14.9"	+43.07	^m 13 ^s 53.10	0.318	^h 20 ^m 47 ^s 19.08
Wed.	2	21 5 15.97	10.140	16 40 52.7	43.79	14 0.33	0.284	20 51 15.64
Thur.	3	21 9 18.92	10.105	16 23 13.1	44.50	14 6.73	0.249	20 55 12.19
Frid.	4	21 13 21.03	10.071	16 5 16.6	45.19	14 12.29	0.215	20 59 8.75
Sat.	5	21 17 22.32	10.036	15 47 3.6	45.98	14 17.01	0.180	21 3 5.30
Sun.	6	21 21 22.77	10.001	15 28 34.5	46.55	14 20.91	0.145	21 7 1.86
Mon.	7	21 25 22.40	9.967	15 9 49.7	47.19	14 23.99	0.111	21 10 58.41
Tues.	8	21 29 21.22	9.933	14 50 49.7	47.81	14 26.25	0.077	21 14 54.97
Wed.	9	21 33 19.23	9.900	14 31 34.8	48.43	14 27.71	0.044	21 18 51.52
Thur.	10	21 37 16.44	9.867	14 12 5.5	49.01	14 28.37	0.011	21 22 48.08
Frid.	11	21 41 12.87	9.835	13 52 22.2	49.59	14 28.24	0.021	21 26 44.63
Sat.	12	21 45 8.52	9.803	13 32 25.3	50.15	14 27.33	0.053	21 30 41.19
Sun.	13	21 49 3.41	9.772	13 12 15.0	50.70	14 25.67	0.084	21 34 37.74
Mon.	14	21 52 57.56	9.740	12 51 51.9	51.22	14 23.26	0.116	21 38 34.30
Tues.	15	21 56 50.98	9.710	12 31 16.4	51.74	14 20.12	0.146	21 42 30.85
Wed.	16	22 0 43.67	9.681	12 10 28.7	52.23	14 16.27	0.175	21 46 27.40
Thur.	17	22 4 35.66	9.652	11 49 29.4	52.71	14 11.71	0.204	21 50 23.95
Frid.	18	22 8 26.97	9.624	11 28 18.7	53.18	14 6.46	0.232	21 54 20.51
Sat.	19	22 12 17.62	9.597	11 6 57.2	53.62	14 0.56	0.259	21 58 17.06
Sun.	20	22 16 7.62	9.570	10 45 25.2	54.04	13 54.00	0.286	22 2 13.62
Mon.	21	22 19 56.98	9.543	10 23 43.1	54.46	13 46.81	0.313	22 6 10.17
Tues.	22	22 23 45.72	9.518	10 1 51.3	54.85	13 38.99	0.338	22 10 6.73
Wed.	23	22 27 33.85	9.493	9 39 50.2	55.23	13 30.57	0.363	22 14 3.28
Thur.	24	22 31 21.40	9.469	9 17 40.3	55.60	13 21.57	0.387	22 17 59.83
Frid.	25	22 35 8.37	9.446	8 55 22.0	55.93	13 11.99	0.410	22 21 56.38
Sat.	26	22 38 54.78	9.423	8 32 55.8	56.26	13 1.84	0.433	22 25 52.94
Sun.	27	22 42 40.65	9.400	8 10 22.0	56.56	12 51.16	0.456	22 29 49.49
Mon.	28	22 46 25.99	9.377	7 47 40.9	56.84	12 39.94	0.479	22 33 46.05
Tues.	29	22 50 10.80	9.356	S. 7 24 53.2	+57.12	12 28.20	0.500	22 37 42.60

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.
 + prefixed to the hourly change of declination indicates that the south declinations are decreasing.

Diff. for 1 hour,
 + 9".8565.
 (Table III.)

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0 ^h .
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ'						
1	32	312° 50' 17.2	49' 54.2	152.20	+0.54	9.9937576	+27.4	^h 3 ^m 12 ^a 9.36	
2	33	313 51 9.3	50 46.2	152.14	0.54	.9938240	28.0	3 8 13.45	
3	34	314 52 0.0	51 36.8	152.08	0.53	.9938918	28.5	3 4 17.54	
4	35	315 52 49.2	52 25.9	152.02	0.47	.9939611	29.1	3 0 21.63	
5	36	316 53 36.9	53 13.4	151.96	0.41	.9940320	29.8	2 56 25.72	
6	37	317 54 23.1	53 59.4	151.90	0.32	.9941045	30.5	2 52 29.81	
7	38	318 55 7.8	54 44.0	151.83	0.20	.9941788	31.3	2 48 33.90	
8	39	319 55 51.0	55 27.1	151.76	+0.07	.9942550	32.1	2 44 37.99	
9	40	320 56 32.5	56 8.5	151.69	−0.07	.9943332	33.0	2 40 42.08	
10	41	321 57 12.4	56 48.2	151.63	0.21	.9944134	33.8	2 36 46.17	
11	42	322 57 50.7	57 26.4	151.56	0.35	.9944957	34.7	2 32 50.26	
12	43	323 58 27.4	58 3.0	151.50	0.46	.9945802	35.6	2 28 54.35	
13	44	324 59 2.5	58 38.0	151.43	0.55	.9946669	36.5	2 24 58.44	
14	45	325 59 36.2	59 11.6	151.37	0.60	.9947557	37.4	2 21 2.53	
15	46	326 60 8.4	59 43.7	151.31	0.64	.9948467	38.3	2 17 6.62	
16	47	328 0 39.2	0 14.4	151.25	0.65	.9949397	39.2	2 13 10.71	
17	48	329 1 8.6	0 43.7	151.19	0.62	.9950348	40.0	2 9 14.81	
18	49	330 1 36.6	1 11.6	151.13	0.56	.9951320	40.7	2 5 18.90	
19	50	331 2 3.3	1 38.1	151.08	0.50	.9952310	41.4	2 1 22.99	
20	51	332 2 28.6	2 3.2	151.02	0.40	.9953315	42.0	1 57 27.08	
21	52	333 2 52.6	2 27.1	150.97	0.28	.9954333	42.6	1 53 31.18	
22	53	334 3 15.2	2 49.6	150.91	0.15	.9955365	43.1	1 49 35.27	
23	54	335 3 36.3	3 10.6	150.85	−0.02	.9956410	43.6	1 45 39.36	
24	55	336 3 56.0	3 30.2	150.79	+0.12	.9957465	44.0	1 41 43.45	
25	56	337 4 14.2	3 48.3	150.72	0.22	.9958528	44.4	1 37 47.55	
26	57	338 4 30.8	4 4.8	150.66	0.33	.9959598	44.7	1 33 51.64	
27	58	339 4 45.9	4 19.8	150.59	0.40	.9960674	44.9	1 29 55.73	
28	59	340 4 59.3	4 33.1	150.52	0.46	.9961756	45.2	1 25 59.80	
29	60	341 5 10.9	4 44.6	150.44	+0.47	9.9962843	+45.4	1 22 3.92	
NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0 ^h .0									Diff. for 1 hour, − 9 ^h .8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	THE MOON'S								
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
1	16 15.3	16 7.9	59 32.8	-2.18	59 5.7	-2.32	h m 2 21.4	m 2.09	d 2.5
2	16 0.2	15 52.3	58 37.3	2.39	58 8.4	2.41	3 10.7	2.03	3.5
3	15 44.4	15 36.7	57 39.5	2.38	57 11.2	2.31	3 59.2	2.01	4.5
4	15 29.3	15 22.4	56 44.0	2.20	56 18.4	2.05	4 47.6	2.02	5.5
5	15 15.9	15 9.9	55 54.6	1.90	55 32.8	1.72	5 36.4	2.04	6.5
6	15 4.6	15 0.0	55 13.3	1.52	54 56.2	1.32	6 25.7	2.06	7.5
7	14 56.0	14 52.6	54 41.5	1.12	54 29.2	0.92	7 15.4	2.07	8.5
8	14 49.9	14 47.9	54 19.2	0.72	54 11.7	0.53	8 5.1	2.06	9.5
9	14 46.4	14 45.6	54 6.4	0.35	54 3.3	-0.17	8 54.1	2.02	10.5
10	14 45.3	14 45.5	54 2.2	-0.01	54 3.0	+0.15	9 42.0	1.97	11.5
11	14 46.2	14 47.3	54 5.6	+0.29	54 9.8	0.41	10 28.5	1.90	12.5
12	14 48.9	14 50.7	54 15.4	0.52	54 22.3	0.62	11 13.4	1.84	13.5
13	14 52.9	14 55.4	54 30.4	0.72	54 39.5	0.80	11 57.1	1.80	14.5
14	14 58.1	15 1.1	54 49.5	0.87	55 0.4	0.94	12 40.1	1.78	15.5
15	15 4.3	15 7.7	55 12.1	1.00	55 24.5	1.07	13 23.0	1.80	16.5
16	15 11.3	15 15.0	55 37.7	1.13	55 51.5	1.18	14 6.6	1.84	17.5
17	15 19.0	15 23.1	56 6.0	1.24	56 21.1	1.29	14 51.7	1.93	18.5
18	15 27.4	15 31.9	56 36.9	1.34	56 53.3	1.39	15 39.2	2.05	19.5
19	15 36.5	15 41.3	57 10.3	1.44	57 27.9	1.49	16 29.9	2.19	20.5
20	15 46.2	15 51.2	57 46.0	1.53	58 4.5	1.55	17 24.2	2.34	21.5
21	15 56.3	16 1.4	58 23.1	1.56	58 41.8	1.54	18 21.8	2.46	22.5
22	16 6.4	16 11.2	59 0.1	1.50	59 17.8	1.43	19 21.7	2.52	23.5
23	16 15.7	16 19.9	59 34.5	1.33	59 49.7	1.19	20 22.3	2.51	24.5
24	16 23.5	16 26.4	60 3.0	1.00	60 13.8	0.78	21 21.9	2.44	25.5
25	16 28.6	16 30.0	60 21.9	+0.53	60 26.7	+0.25	22 19.3	2.33	26.5
26	16 30.3	16 29.7	60 28.1	-0.05	60 25.6	-0.37	23 14.0	2.23	27.5
27	16 28.0	16 25.2	60 19.4	0.68	60 9.4	0.98	2		28.5
28	16 21.6	16 17.0	59 55.9	1.27	59 39.0	1.53	0 6.5	2.14	0.0
29	16 11.6	16 5.6	59 19.3	1.74	58 57.2	1.92	0 57.3	2.09	1.0
30	15 59.1	15 52.2	58 33.3	2.05	58 8.1	2.13	1 47.2	2.07	2.0
31	15 45.2	15 38.1	57 42.2	2.17	57 16.2	2.15	2 36.9	2.07	3.0
32	15 31.1	15 24.4	56 50.6	-2.09	56 25.9	-2.01	3 26.8	2.09	4.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 1.					THURSDAY 3.				
0	23 3 54.53	2.1897	S. 0 30 2.9	14.387	0	0 46 40.14	2.1134	N. 10 18 34.7	12.917
1	23 6 5.82	2.1898	0 15 40.2	14.389	1	0 48 46.94	2.1131	10 30 45.6	12.146
2	23 8 16.94	2.1839	S. 0 1 18.6	14.330	2	0 50 53.72	2.1198	10 42 52.2	12.075
3	23 10 27.89	2.1811	N. 0 13 1.8	14.330	3	0 53 0.48	2.1196	10 54 54.6	12.004
4	23 12 38.67	2.1798	0 27 21.0	14.309	4	0 55 7.23	2.1194	11 6 52.7	11.933
5	23 14 49.28	2.1755	0 41 38.9	14.287	5	0 57 13.97	2.1193	11 18 46.4	11.859
6	23 16 59.73	2.1729	0 55 55.4	14.263	6	0 59 20.71	2.1192	11 30 35.8	11.786
7	23 19 10.03	2.1703	1 10 10.4	14.238	7	1 1 27.44	2.1192	11 42 20.7	11.711
8	23 21 20.17	2.1678	1 24 23.9	14.212	8	1 3 34.17	2.1192	11 54 1.1	11.635
9	23 23 30.16	2.1653	1 38 35.8	14.184	9	1 5 40.90	2.1192	12 5 36.9	11.559
10	23 25 40.01	2.1629	1 52 46.0	14.155	10	1 7 47.63	2.1192	12 17 8.2	11.482
11	23 27 49.71	2.1605	2 6 54.4	14.124	11	1 9 54.36	2.1193	12 28 34.8	11.404
12	23 29 59.27	2.1583	2 21 0.9	14.092	12	1 12 1.10	2.1194	12 39 56.7	11.326
13	23 32 8.70	2.1561	2 35 5.4	14.059	13	1 14 7.85	2.1196	12 51 13.9	11.247
14	23 34 18.00	2.1539	2 49 8.0	14.025	14	1 16 14.61	2.1198	13 2 26.3	11.167
15	23 36 27.17	2.1518	3 3 8.5	13.991	15	1 18 21.38	2.1190	13 13 34.0	11.087
16	23 38 36.21	2.1497	3 17 6.9	13.954	16	1 20 28.17	2.1133	13 24 36.8	11.006
17	23 40 45.13	2.1477	3 31 3.0	13.916	17	1 22 34.98	2.1136	13 35 34.7	10.925
18	23 42 53.94	2.1458	3 44 56.8	13.877	18	1 24 41.80	2.1139	13 46 27.8	10.843
19	23 45 2.63	2.1439	3 58 48.2	13.837	19	1 26 48.65	2.1143	13 57 15.9	10.759
20	23 47 11.21	2.1422	4 12 37.2	13.796	20	1 28 55.52	2.1147	14 7 58.9	10.675
21	23 49 19.69	2.1404	4 26 23.7	13.753	21	1 31 2.41	2.1151	14 18 36.9	10.591
22	23 51 28.06	2.1387	4 40 7.6	13.709	22	1 33 9.33	2.1156	14 29 9.8	10.506
23	23 53 36.33	2.1370	N. 4 53 48.8	13.664	23	1 35 16.28	2.1161	N. 14 39 37.6	10.420
WEDNESDAY 2.					FRIDAY 4.				
0	23 55 44.50	2.1354	N. 5 7 27.3	13.618	0	1 37 23.26	2.1166	N. 14 50 0.2	10.333
1	23 57 52.58	2.1339	5 21 3.0	13.579	1	1 39 30.27	2.1171	15 0 17.6	10.247
2	0 0 0.57	2.1394	5 34 35.9	13.543	2	1 41 37.31	2.1177	15 10 29.8	10.160
3	0 2 8.47	2.1310	5 48 5.8	13.474	3	1 43 44.39	2.1182	15 20 36.8	10.072
4	0 4 16.29	2.1297	6 1 32.8	13.425	4	1 45 51.50	2.1186	15 30 38.4	9.983
5	0 6 24.03	2.1284	6 14 56.8	13.373	5	1 47 58.65	2.1195	15 40 34.7	9.893
6	0 8 31.70	2.1279	6 28 17.6	13.320	6	1 50 5.84	2.1202	15 50 25.6	9.803
7	0 10 39.29	2.1259	6 41 35.2	13.267	7	1 52 13.07	2.1208	16 0 11.1	9.713
8	0 12 46.81	2.1248	6 54 49.7	13.214	8	1 54 20.31	2.1215	16 9 51.2	9.622
9	0 14 54.27	2.1237	7 8 0.9	13.158	9	1 56 27.65	2.1222	16 19 25.8	9.531
10	0 17 1.66	2.1227	7 21 8.7	13.102	10	1 58 35.01	2.1230	16 28 54.9	9.439
11	0 19 8.99	2.1217	7 34 13.1	13.044	11	2 0 42.41	2.1238	16 38 18.4	9.346
12	0 21 16.26	2.1208	7 47 14.0	12.986	12	2 2 49.86	2.1246	16 47 36.4	9.252
13	0 23 23.48	2.1199	8 0 11.4	12.927	13	2 4 57.36	2.1253	16 56 48.7	9.158
14	0 25 30.65	2.1190	8 13 5.2	12.867	14	2 7 4.90	2.1261	17 5 55.4	9.065
15	0 27 37.76	2.1182	8 25 55.4	12.806	15	2 9 12.49	2.1269	17 14 56.5	8.971
16	0 29 44.83	2.1175	8 38 41.9	12.744	16	2 11 20.13	2.1277	17 23 51.9	8.875
17	0 31 51.86	2.1169	8 51 24.7	12.682	17	2 13 27.82	2.1286	17 32 41.5	8.779
18	0 33 58.86	2.1163	9 4 3.7	12.617	18	2 15 35.56	2.1294	17 41 25.4	8.683
19	0 36 5.82	2.1157	9 16 38.8	12.552	19	2 17 43.35	2.1303	17 50 3.5	8.587
20	0 38 12.74	2.1151	9 29 10.0	12.487	20	2 19 51.20	2.1312	17 58 35.8	8.489
21	0 40 19.63	2.1146	9 41 37.3	12.421	21	2 21 59.10	2.1321	18 7 2.2	8.391
22	0 42 26.49	2.1142	9 54 0.5	12.353	22	2 24 7.05	2.1330	18 15 22.7	8.292
23	0 44 33.33	2.1138	10 6 19.6	12.285	23	2 26 15.05	2.1338	18 23 37.3	8.194
24	0 46 40.14	2.1134	N. 10 18 34.7	12.217	24	2 28 23.11	2.1348	N. 18 31 46.0	8.095

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 5.					MONDAY 7.				
0	2 28 23.11	2.1346	N.18° 31' 46.0"	8.085	0	4 11 48.15	2.1685	N.22° 59' 21.7"	2.949
1	2 30 31.23	2.1357	18 39 48.7	7.995	1	4 13 58.27	2.1687	23 2 15.3	2.836
2	2 32 39.40	2.1366	18 47 45.4	7.896	2	4 16 8.39	2.1688	23 5 2.1	2.723
3	2 34 47.62	2.1375	18 55 36.2	7.796	3	4 18 18.52	2.1689	23 7 42.1	2.611
4	2 36 55.90	2.1384	19 3 20.9	7.695	4	4 20 28.66	2.1690	23 10 15.4	2.498
5	2 39 4.23	2.1393	19 10 59.6	7.594	5	4 22 38.80	2.1690	23 12 41.9	2.385
6	2 41 12.62	2.1403	19 18 32.2	7.493	6	4 24 48.94	2.1690	23 15 1.6	2.273
7	2 43 21.07	2.1412	19 25 58.7	7.390	7	4 26 59.08	2.1690	23 17 14.6	2.160
8	2 45 29.57	2.1421	19 33 19.0	7.287	8	4 29 9.22	2.1690	23 19 20.8	2.047
9	2 47 38.12	2.1430	19 40 33.2	7.185	9	4 31 19.36	2.1689	23 21 20.2	1.933
10	2 49 46.73	2.1439	19 47 41.2	7.083	10	4 33 29.49	2.1688	23 23 12.8	1.821
11	2 51 55.39	2.1448	19 54 43.0	6.978	11	4 35 39.61	2.1686	23 24 58.7	1.708
12	2 54 4.11	2.1457	20 1 38.6	6.874	12	4 37 49.72	2.1683	23 26 37.8	1.595
13	2 56 12.88	2.1467	20 8 27.9	6.770	13	4 39 59.81	2.1681	23 28 10.1	1.483
14	2 58 21.71	2.1476	20 15 11.0	6.666	14	4 42 9.89	2.1679	23 29 35.6	1.369
15	3 0 30.59	2.1484	20 21 47.8	6.561	15	4 44 19.96	2.1677	23 30 54.4	1.256
16	3 2 39.52	2.1493	20 28 18.3	6.455	16	4 46 30.01	2.1673	23 32 6.4	1.143
17	3 4 48.51	2.1502	20 34 42.4	6.349	17	4 48 40.03	2.1668	23 33 11.6	1.031
18	3 6 57.55	2.1511	20 41 0.2	6.243	18	4 50 50.03	2.1664	23 34 10.1	0.918
19	3 9 6.64	2.1519	20 47 11.6	6.137	19	4 53 0.00	2.1659	23 35 1.8	0.805
20	3 11 15.78	2.1527	20 53 16.6	6.031	20	4 55 9.94	2.1655	23 35 46.7	0.693
21	3 13 24.97	2.1536	20 59 15.3	5.925	21	4 57 19.86	2.1650	23 36 24.8	0.579
22	3 15 34.21	2.1544	21 5 7.6	5.817	22	4 59 29.74	2.1644	23 36 56.2	0.467
23	3 17 43.50	2.1553	N.21° 10' 53.4"	5.709	23	5 1 39.59	2.1638	N.23° 37' 20.8"	0.354
SUNDAY 6.					TUESDAY 8.				
0	3 19 52.84	2.1560	N.21° 16' 32.7"	5.602	0	5 3 49.40	2.1633	N.23° 37' 38.7"	0.942
1	3 22 2.22	2.1567	21 22 5.6	5.494	1	5 5 59.17	2.1625	23 37 49.8	0.139
2	3 24 11.65	2.1575	21 27 32.0	5.385	2	5 8 8.90	2.1617	23 37 54.2	+0.017
3	3 26 21.12	2.1582	21 32 51.8	5.276	3	5 10 18.58	2.1609	23 37 51.9	-0.084
4	3 28 30.64	2.1590	21 38 5.1	5.167	4	5 12 28.21	2.1601	23 37 42.9	0.206
5	3 30 40.20	2.1597	21 43 11.9	5.058	5	5 14 37.79	2.1593	23 37 27.2	0.318
6	3 32 49.80	2.1603	21 48 12.1	4.948	6	5 16 47.33	2.1585	23 37 4.7	0.431
7	3 34 59.44	2.1610	21 53 5.7	4.839	7	5 18 56.81	2.1575	23 36 35.5	0.542
8	3 37 9.12	2.1617	21 57 52.8	4.730	8	5 21 6.23	2.1566	23 35 59.7	0.653
9	3 39 18.84	2.1623	22 2 33.3	4.620	9	5 23 15.60	2.1557	23 35 17.2	0.764
10	3 41 28.60	2.1630	22 7 7.2	4.510	10	5 25 24.91	2.1548	23 34 28.0	0.875
11	3 43 38.39	2.1634	22 11 34.5	4.399	11	5 27 34.15	2.1535	23 33 32.2	0.986
12	3 45 48.21	2.1640	22 15 55.1	4.288	12	5 29 43.33	2.1524	23 32 29.7	1.097
13	3 47 58.07	2.1646	22 20 9.1	4.177	13	5 31 52.44	2.1513	23 31 20.6	1.207
14	3 50 7.96	2.1650	22 24 16.4	4.067	14	5 34 1.48	2.1502	23 30 4.9	1.317
15	3 52 17.87	2.1654	22 28 17.1	3.956	15	5 36 10.46	2.1490	23 28 42.5	1.427
16	3 54 27.81	2.1659	22 32 11.1	3.844	16	5 38 19.36	2.1477	23 27 13.6	1.537
17	3 56 37.78	2.1664	22 35 58.4	3.732	17	5 40 28.18	2.1463	23 25 38.1	1.647
18	3 58 47.78	2.1668	22 39 39.0	3.621	18	5 42 36.92	2.1450	23 23 56.0	1.758
19	4 0 57.80	2.1673	22 43 12.9	3.509	19	5 44 45.58	2.1437	23 22 7.4	1.865
20	4 3 7.84	2.1674	22 46 40.1	3.398	20	5 46 54.16	2.1423	23 20 12.2	1.974
21	4 5 17.89	2.1677	22 50 0.6	3.286	21	5 49 2.66	2.1409	23 18 10.5	2.082
22	4 7 27.96	2.1680	22 53 14.4	3.173	22	5 51 11.07	2.1394	23 16 2.3	2.191
23	4 9 38.05	2.1682	22 56 21.4	3.061	23	5 53 19.39	2.1380	23 13 47.6	2.299
24	4 11 48.15	2.1685	N.23° 59' 21.7"	2.949	24	5 55 27.63	2.1365	N.23° 11' 26.4"	2.407

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 9.					FRIDAY 11.				
0	5 55 27.63	2.1365	N.23 11' 26.4"	2.407	0	7 35 44.58	2.0348	N.19 18' 55.4"	7.108
1	5 57 35.77	2.1349	23 8 58.8	2.514	1	7 37 46.60	2.0394	19 11 46.4	7.193
2	5 59 43.81	2.1333	23 6 24.8	2.621	2	7 39 48.47	2.0439	19 4 32.2	7.279
3	6 1 51.76	2.1317	23 3 44.3	2.728	3	7 41 50.19	2.0475	18 57 12.9	7.363
4	6 3 59.61	2.1300	23 0 57.4	2.835	4	7 43 51.77	2.0521	18 49 48.6	7.448
5	6 6 7.36	2.1283	22 58 4.1	2.941	5	7 45 53.20	2.0567	18 42 19.2	7.532
6	6 8 15.01	2.1266	22 55 4.5	3.047	6	7 47 54.49	2.0609	18 34 44.8	7.614
7	6 10 22.55	2.1248	22 51 58.5	3.152	7	7 49 55.63	2.0178	18 27 5.5	7.696
8	6 12 29.99	2.1231	22 48 46.2	3.257	8	7 51 56.63	2.0155	18 19 21.3	7.778
9	6 14 37.32	2.1213	22 45 27.6	3.362	9	7 53 57.49	2.0131	18 11 32.1	7.860
10	6 16 44.54	2.1194	22 42 2.8	3.466	10	7 55 58.20	2.0107	18 3 38.1	7.939
11	6 18 51.65	2.1176	22 38 31.7	3.570	11	7 57 58.77	2.0089	17 55 39.4	8.018
12	6 20 58.65	2.1157	22 34 54.4	3.674	12	7 59 59.19	2.0058	17 47 35.9	8.098
13	6 23 5.53	2.1137	22 31 10.8	3.777	13	8 1 59.47	2.0035	17 39 27.6	8.177
14	6 25 12.29	2.1117	22 27 21.1	3.880	14	8 3 59.61	2.0011	17 31 14.7	8.254
15	6 27 18.94	2.1098	22 23 25.2	3.983	15	8 5 59.60	1.9988	17 22 57.1	8.331
16	6 29 25.47	2.1078	22 19 23.1	4.086	16	8 7 59.46	1.9965	17 14 34.9	8.408
17	6 31 31.88	2.1058	22 15 14.9	4.188	17	8 9 59.18	1.9941	17 6 8.1	8.485
18	6 33 38.17	2.1038	22 11 0.6	4.289	18	8 11 58.75	1.9917	16 57 36.7	8.561
19	6 35 44.34	2.1017	22 6 40.2	4.390	19	8 13 58.18	1.9894	16 49 0.8	8.635
20	6 37 50.38	2.0996	22 2 13.8	4.490	20	8 15 57.48	1.9871	16 40 20.5	8.708
21	6 39 56.29	2.0974	21 57 41.4	4.590	21	8 17 56.64	1.9848	16 31 35.8	8.782
22	6 42 2.07	2.0953	21 53 3.0	4.689	22	8 19 55.66	1.9826	16 22 46.7	8.855
23	6 44 7.73	2.0932	N.21 48 18.7	4.788	23	8 21 54.55	1.9803	N.16 13 53.2	8.927
THURSDAY 10.					SATURDAY 12.				
0	6 46 13.26	2.0911	N.21 43 28.4	4.887	0	8 23 53.30	1.9781	N.16 4 55.4	8.999
1	6 48 18.66	2.0888	21 38 32.2	4.986	1	8 25 51.92	1.9759	15 55 53.3	9.070
2	6 50 23.92	2.0866	21 33 30.1	5.083	2	8 27 50.41	1.9737	15 46 47.0	9.140
3	6 52 29.05	2.0844	21 28 22.2	5.181	3	8 29 48.76	1.9714	15 37 36.5	9.210
4	6 54 34.05	2.0822	21 23 8.4	5.278	4	8 31 46.98	1.9693	15 28 21.8	9.278
5	6 56 38.91	2.0799	21 17 48.8	5.374	5	8 33 45.08	1.9672	15 19 3.1	9.346
6	6 58 43.64	2.0777	21 12 23.5	5.470	6	8 35 43.05	1.9651	15 9 40.3	9.414
7	7 0 48.23	2.0753	21 6 52.4	5.566	7	8 37 40.89	1.9629	15 0 13.4	9.481
8	7 2 52.68	2.0730	21 1 15.6	5.661	8	8 39 38.60	1.9603	14 50 42.6	9.547
9	7 4 56.99	2.0707	20 55 33.1	5.755	9	8 41 36.19	1.9588	14 41 7.8	9.612
10	7 7 1.16	2.0683	20 49 45.0	5.849	10	8 43 33.66	1.9567	14 31 29.1	9.677
11	7 9 5.19	2.0660	20 43 51.3	5.943	11	8 45 31.00	1.9547	14 21 46.5	9.742
12	7 11 9.08	2.0637	20 37 51.9	6.036	12	8 47 28.22	1.9527	14 12 0.0	9.806
13	7 13 12.83	2.0613	20 31 46.9	6.128	13	8 49 25.32	1.9507	14 2 9.8	9.869
14	7 15 16.44	2.0589	20 25 36.5	6.219	14	8 51 22.31	1.9488	13 52 15.8	9.931
15	7 17 19.90	2.0565	20 19 20.6	6.311	15	8 53 19.18	1.9469	13 42 18.1	9.992
16	7 19 23.22	2.0543	20 12 59.2	6.402	16	8 55 15.94	1.9451	13 32 16.7	10.052
17	7 21 26.40	2.0518	20 6 32.4	6.492	17	8 57 12.59	1.9432	13 22 11.8	10.112
18	7 23 29.43	2.0493	20 0 0.2	6.582	18	8 59 9.12	1.9413	13 12 3.3	10.172
19	7 25 32.32	2.0469	19 53 22.6	6.671	19	9 1 5.55	1.9396	13 1 51.2	10.230
20	7 27 35.06	2.0445	19 46 39.7	6.759	20	9 3 1.87	1.9378	12 51 35.7	10.287
21	7 29 37.66	2.0421	19 39 51.5	6.847	21	9 4 58.08	1.9360	12 41 16.7	10.345
22	7 31 40.11	2.0397	19 32 58.0	6.935	22	9 6 54.19	1.9343	12 30 54.3	10.402
23	7 33 42.42	2.0373	19 25 59.3	7.022	23	9 8 50.20	1.9326	12 20 28.5	10.458
24	7 35 44.58	2.0348	N.19 18 55.4	7.108	24	9 10 46.10	1.9309	N.12 9 59.3	10.514

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 13.					TUESDAY 15.				
0	9 10 46.10	1.9309	N. 12° 9' 59.3"	10.514	0	10 42 15.26	1.9979	N. 2° 55' 43.6"	12.399
1	9 12 41.91	1.9293	11 59 26.8	10.567	1	10 44 9.10	1.9977	2 43 25.5	12.310
2	9 14 37.62	1.9277	11 48 51.2	10.630	2	10 46 2.98	1.9969	2 31 6.4	12.398
3	9 16 33.24	1.9269	11 38 12.4	10.673	3	10 47 56.89	1.9967	2 18 46.2	12.345
4	9 18 28.76	1.9246	11 27 30.4	10.736	4	10 49 50.83	1.9963	2 6 25.0	12.360
5	9 20 24.19	1.9238	11 16 45.2	10.778	5	10 51 44.81	1.9960	1 54 3.0	12.374
6	9 22 19.54	1.9217	11 5 57.0	10.898	6	10 53 38.82	1.9905	1 41 40.1	12.388
7	9 24 14.80	1.9209	10 55 5.8	10.878	7	10 55 32.87	1.9913	1 29 16.4	12.403
8	9 26 9.97	1.9188	10 44 11.6	10.928	8	10 57 26.97	1.9981	1 16 51.9	12.415
9	9 28 5.06	1.9175	10 33 14.4	10.977	9	10 59 21.12	1.9989	1 4 26.6	12.437
10	9 30 0.07	1.9163	10 22 14.3	11.025	10	11 1 15.32	1.9938	0 52 0.7	12.437
11	9 31 55.01	1.9150	10 11 11.4	11.073	11	11 3 9.58	1.9947	0 39 34.2	12.447
12	9 33 49.87	1.9137	10 0 5.6	11.119	12	11 5 3.89	1.9957	0 27 7.1	12.457
13	9 35 44.66	1.9135	9 48 57.1	11.164	13	11 6 58.26	1.9967	0 14 39.4	12.465
14	9 37 39.37	1.9113	9 37 45.9	11.210	14	11 8 52.70	1.9978	N. 0 2 11.3	12.473
15	9 39 34.01	1.9109	9 26 31.9	11.255	15	11 10 47.20	1.9989	S. 0 10 17.3	12.479
16	9 41 28.59	1.9092	9 15 15.3	11.298	16	11 12 41.77	1.9109	0 22 46.2	12.484
17	9 43 23.11	1.9081	9 3 56.2	11.340	17	11 14 36.42	1.9115	0 35 15.4	12.489
18	9 45 17.56	1.9070	8 52 34.5	11.389	18	11 16 31.15	1.9128	0 47 44.9	12.494
19	9 47 11.95	1.9061	8 41 10.3	11.433	19	11 18 25.95	1.9141	1 0 14.7	12.498
20	9 49 6.29	1.9052	8 29 43.7	11.464	20	11 20 20.84	1.9156	1 12 44.7	12.501
21	9 51 0.57	1.9043	8 18 14.6	11.504	21	11 22 15.82	1.9171	1 25 14.8	12.502
22	9 52 54.80	1.9034	8 6 43.2	11.543	22	11 24 10.89	1.9186	1 37 44.9	12.502
23	9 54 48.96	1.9027	N. 7 55 9.5	11.589	23	11 26 6.05	1.9200	S. 1 50 15.1	12.508
MONDAY 14.					WEDNESDAY 16.				
0	9 56 43.12	1.9019	N. 7 43 33.4	11.630	0	11 28 1.31	1.9218	S. 2 2 45.2	12.501
1	9 58 37.21	1.9012	7 31 55.1	11.656	1	11 29 56.67	1.9235	2 15 15.2	12.499
2	10 0 31.26	1.9005	7 20 14.7	11.692	2	11 31 52.13	1.9253	2 27 45.1	12.497
3	10 2 25.27	1.8998	7 8 32.1	11.727	3	11 33 47.70	1.9271	2 40 14.8	12.493
4	10 4 19.24	1.8992	6 56 47.4	11.769	4	11 35 43.38	1.9289	2 52 44.3	12.489
5	10 6 13.18	1.8987	6 45 0.7	11.796	5	11 37 39.17	1.9308	3 5 13.5	12.483
6	10 8 7.09	1.8982	6 33 11.9	11.829	6	11 39 35.08	1.9328	3 17 42.3	12.477
7	10 10 0.97	1.8977	6 21 21.2	11.869	7	11 41 31.11	1.9349	3 30 10.7	12.470
8	10 11 54.82	1.8973	6 9 28.5	11.893	8	11 43 27.27	1.9370	3 42 38.7	12.469
9	10 13 48.65	1.8970	5 57 34.0	11.923	9	11 45 23.55	1.9391	3 55 6.2	12.453
10	10 15 42.46	1.8967	5 45 37.7	11.953	10	11 47 19.96	1.9413	4 7 33.1	12.443
11	10 17 36.25	1.8964	5 33 39.6	11.983	11	11 49 16.51	1.9436	4 19 59.4	12.439
12	10 19 30.03	1.8962	5 21 39.7	12.012	12	11 51 13.19	1.9458	4 32 25.0	12.431
13	10 21 23.79	1.8960	5 9 38.1	12.039	13	11 53 10.01	1.9480	4 44 49.9	12.408
14	10 23 17.55	1.8959	4 57 35.0	12.065	14	11 55 6.98	1.9507	4 57 14.0	12.395
15	10 25 11.30	1.8958	4 45 30.3	12.092	15	11 57 4.10	1.9539	5 9 37.3	12.381
16	10 27 5.05	1.8958	4 33 24.0	12.118	16	11 59 1.36	1.9557	5 21 59.7	12.365
17	10 28 58.80	1.8958	4 21 16.2	12.143	17	12 0 58.78	1.9583	5 34 21.1	12.348
18	10 30 52.55	1.8959	4 9 6.9	12.167	18	12 2 56.36	1.9610	5 46 41.5	12.331
19	10 32 46.31	1.8960	3 56 56.2	12.189	19	12 4 54.10	1.9637	5 59 0.8	12.313
20	10 34 40.07	1.8961	3 44 44.2	12.211	20	12 6 52.00	1.9664	6 11 19.1	12.295
21	10 36 33.84	1.8963	3 32 30.9	12.232	21	12 8 50.07	1.9692	6 23 36.2	12.275
22	10 38 27.63	1.8966	3 20 16.3	12.253	22	12 10 48.31	1.9722	6 35 52.1	12.254
23	10 40 21.44	1.8969	3 8 0.5	12.273	23	12 12 46.73	1.9752	6 48 6.7	12.239
24	10 42 15.26	1.8972	N. 2 55 43.6	12.292	24	12 14 45.33	1.9782	S. 7 0 19.9	12.208

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 17.					SATURDAY 19.				
0	12 14 45.33	1.9789	S. 7° 0' 19.9	12.908	0	13 54 9.97	2.1885	S. 16° 0' 35.7	9.888
1	12 16 44.11	1.9819	7 12 31.7	12.185	1	13 56 21.08	2.1878	16 10 26.7	9.812
2	12 18 43.07	1.9842	7 24 42.1	12.161	2	13 58 32.51	2.1839	16 20 13.1	9.734
3	12 20 42.22	1.9874	7 36 51.0	12.135	3	14 0 44.26	2.1865	16 29 54.8	9.656
4	12 22 41.56	1.9907	7 48 58.3	12.107	4	14 2 56.33	2.2039	16 39 31.8	9.577
5	12 24 41.10	1.9939	8 1 3.9	12.079	5	14 5 8.73	2.2083	16 49 4.0	9.497
6	12 26 40.83	1.9972	8 13 7.8	12.050	6	14 7 21.45	2.2147	16 58 31.4	9.415
7	12 28 40.76	2.0006	8 25 9.9	12.020	7	14 9 34.50	2.2202	17 7 53.8	9.332
8	12 30 40.90	2.0041	8 37 10.2	11.990	8	14 11 47.88	2.2257	17 17 11.2	9.247
9	12 32 41.25	2.0076	8 49 8.7	11.959	9	14 14 1.59	2.2312	17 26 23.4	9.161
10	12 34 41.81	2.0112	9 1 5.3	11.927	10	14 16 15.63	2.2367	17 35 30.5	9.075
11	12 36 42.59	2.0147	9 12 59.9	11.893	11	14 18 30.00	2.2423	17 44 32.4	8.987
12	12 38 43.58	2.0183	9 24 52.4	11.858	12	14 20 44.71	2.2479	17 53 29.0	8.898
13	12 40 44.79	2.0221	9 36 42.8	11.823	13	14 22 59.75	2.2535	18 2 20.2	8.808
14	12 42 46.23	2.0259	9 48 31.0	11.785	14	14 25 15.13	2.2591	18 11 6.0	8.717
15	12 44 47.90	2.0297	10 0 17.0	11.747	15	14 27 30.84	2.2647	18 19 46.2	8.623
16	12 46 49.80	2.0336	10 12 0.6	11.708	16	14 29 46.89	2.2703	18 28 20.8	8.529
17	12 48 51.93	2.0374	10 23 41.9	11.668	17	14 32 3.28	2.2759	18 36 49.7	8.434
18	12 50 54.29	2.0413	10 35 20.8	11.627	18	14 34 20.00	2.2815	18 45 12.9	8.337
19	12 52 56.89	2.0454	10 46 57.2	11.585	19	14 36 37.06	2.2872	18 53 30.2	8.240
20	12 54 59.74	2.0496	10 58 31.0	11.542	20	14 38 54.46	2.2928	19 1 41.7	8.142
21	12 57 2.84	2.0537	11 10 2.2	11.498	21	14 41 12.20	2.2985	19 9 47.2	8.041
22	12 59 6.19	2.0579	11 21 30.7	11.453	22	14 43 30.28	2.3042	19 17 46.6	7.940
23	13 1 9.79	2.0621	S. 11° 32' 56.5	11.407	23	14 45 48.70	2.3097	S. 19° 25' 40.0	7.838
FRIDAY 18.					SUNDAY 20.				
0	13 3 13.64	2.0663	S. 11° 44' 19.5	11.359	0	14 48 7.45	2.3153	S. 19° 33' 27.2	7.734
1	13 5 17.75	2.0707	11 55 39.6	11.311	1	14 50 26.54	2.3210	19 41 8.1	7.629
2	13 7 22.12	2.0751	12 6 56.8	11.263	2	14 52 45.97	2.3267	19 48 42.7	7.522
3	13 9 26.76	2.0795	12 18 11.0	11.211	3	14 55 5.74	2.3323	19 56 10.8	7.414
4	13 11 31.66	2.0839	12 29 22.1	11.158	4	14 57 25.85	2.3379	20 3 32.4	7.306
5	13 13 36.83	2.0885	12 40 30.0	11.105	5	14 59 46.29	2.3435	20 10 47.5	7.197
6	13 15 42.28	2.0931	12 51 34.7	11.053	6	15 2 7.07	2.3491	20 17 56.1	7.086
7	13 17 48.00	2.0977	13 2 36.2	10.998	7	15 4 28.18	2.3547	20 24 57.9	6.973
8	13 19 54.00	2.1023	13 13 34.4	10.942	8	15 6 49.63	2.3603	20 31 52.9	6.860
9	13 22 0.28	2.1071	13 24 29.2	10.884	9	15 9 11.41	2.3657	20 38 41.1	6.746
10	13 24 6.85	2.1118	13 35 20.5	10.825	10	15 11 33.52	2.3713	20 45 22.4	6.630
11	13 26 13.70	2.1166	13 46 8.2	10.765	11	15 13 55.96	2.3767	20 51 56.7	6.512
12	13 28 20.84	2.1214	13 56 52.3	10.705	12	15 16 18.73	2.3823	20 58 23.9	6.394
13	13 30 28.27	2.1263	14 7 32.8	10.643	13	15 18 41.83	2.3877	21 4 44.0	6.275
14	13 32 36.00	2.1313	14 18 9.5	10.580	14	15 21 5.25	2.3931	21 10 56.9	6.155
15	13 34 44.03	2.1362	14 28 42.4	10.516	15	15 23 29.00	2.3985	21 17 2.6	6.034
16	13 36 52.35	2.1412	14 39 11.4	10.451	16	15 25 53.07	2.4038	21 23 1.0	5.919
17	13 39 0.98	2.1463	14 49 36.5	10.385	17	15 28 17.45	2.4090	21 28 52.0	5.787
18	13 41 9.91	2.1514	14 59 57.6	10.317	18	15 30 42.15	2.4143	21 34 35.4	5.661
19	13 43 19.15	2.1565	15 10 14.6	10.248	19	15 33 7.16	2.4195	21 40 11.3	5.535
20	13 45 28.69	2.1616	15 20 27.4	10.178	20	15 35 32.49	2.4247	21 45 39.6	5.408
21	13 47 38.54	2.1668	15 30 36.0	10.107	21	15 37 58.13	2.4299	21 51 0.3	5.280
22	13 49 48.70	2.1720	15 40 40.3	10.035	22	15 40 24.08	2.4350	21 56 13.2	5.150
23	13 51 59.18	2.1772	15 50 40.2	9.962	23	15 42 50.33	2.4400	22 1 18.3	5.020
24	13 54 9.97	2.1825	S. 16° 0' 35.7	9.888	24	15 45 16.88	2.4450	S. 22° 6' 15.6	4.889

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 21.					WEDNESDAY 23.				
0	15 45 16.88	2.4450	S. 22° 6' 15.6"	4.889	0	17 46 58.94	2.5807	S. 23° 12' 45.2"	2.352
1	15 47 43.73	2.4499	22 11 5.0	4.756	1	17 49 34.34	2.5908	23 10 19.2	2.513
2	15 50 10.87	2.4548	22 15 46.3	4.621	2	17 52 9.77	2.5906	23 7 43.6	2.673
3	15 52 38.31	2.4597	22 20 19.5	4.486	3	17 54 45.21	2.5908	23 4 58.4	2.833
4	15 55 6.04	2.4645	22 24 44.6	4.351	4	17 57 20.67	2.5910	23 2 3.6	2.994
5	15 57 34.05	2.4692	22 29 1.6	4.215	5	17 59 56.13	2.5910	22 58 59.1	3.155
6	16 0 2.34	2.4738	22 33 10.4	4.077	6	18 2 31.59	2.5909	22 55 45.0	3.315
7	16 2 30.91	2.4784	22 37 10.9	3.938	7	18 5 7.04	2.5907	22 52 21.3	3.475
8	16 4 59.75	2.4829	22 41 3.0	3.798	8	18 7 42.48	2.5905	22 48 48.0	3.634
9	16 7 28.86	2.4874	22 44 46.6	3.657	9	18 10 17.90	2.5901	22 45 5.2	3.793
10	16 9 58.24	2.4917	22 48 21.8	3.516	10	18 12 53.29	2.5896	22 41 12.8	3.952
11	16 12 27.87	2.4960	22 51 48.5	3.373	11	18 15 28.65	2.5890	22 37 10.9	4.112
12	16 14 57.76	2.5003	22 55 6.6	3.229	12	18 18 3.97	2.5889	22 32 59.4	4.271
13	16 17 27.91	2.5045	22 58 16.0	3.085	13	18 20 39.24	2.5874	22 28 38.4	4.428
14	16 19 58.30	2.5085	23 1 16.8	2.941	14	18 23 14.46	2.5864	22 24 8.0	4.585
15	16 22 28.93	2.5125	23 4 8.9	2.795	15	18 25 49.61	2.5853	22 19 28.2	4.742
16	16 24 59.80	2.5164	23 6 52.2	2.647	16	18 28 24.70	2.5842	22 14 39.0	4.898
17	16 27 30.90	2.5202	23 9 26.6	2.499	17	18 30 59.72	2.5830	22 9 40.4	5.055
18	16 30 2.23	2.5240	23 11 52.1	2.351	18	18 33 34.66	2.5816	22 4 32.4	5.211
19	16 32 33.78	2.5277	23 14 8.7	2.203	19	18 36 9.51	2.5802	21 59 15.1	5.365
20	16 35 5.55	2.5312	23 16 16.3	2.052	20	18 38 44.28	2.5787	21 53 48.6	5.519
21	16 37 37.53	2.5347	23 18 14.9	1.902	21	18 41 18.95	2.5770	21 48 12.8	5.673
22	16 40 9.72	2.5381	23 20 4.5	1.750	22	18 43 53.52	2.5752	21 42 27.8	5.827
23	16 42 42.10	2.5414	S. 23° 21' 44.9"	1.597	23	18 46 27.98	2.5734	S. 21° 36' 33.6"	5.979
TUESDAY 22.					THURSDAY 24.				
0	16 45 14.68	2.5446	S. 23° 23' 16.2"	1.445	0	18 49 2.33	2.5715	S. 21° 30' 30.3"	6.131
1	16 47 47.45	2.5477	23 24 38.3	1.292	1	18 51 36.56	2.5694	21 24 17.9	6.289
2	16 50 20.40	2.5507	23 25 51.2	1.138	2	18 54 10.66	2.5673	21 17 56.5	6.431
3	16 52 53.53	2.5536	23 26 54.8	0.983	3	18 56 44.63	2.5651	21 11 26.2	6.580
4	16 55 26.83	2.5564	23 27 49.1	0.828	4	18 59 18.47	2.5628	21 4 46.9	6.729
5	16 58 0.29	2.5591	23 28 34.1	0.673	5	19 1 52.17	2.5604	20 57 58.7	6.877
6	17 0 33.92	2.5617	23 29 9.8	0.516	6	19 4 25.72	2.5579	20 51 1.7	7.023
7	17 3 7.70	2.5643	23 29 36.1	0.359	7	19 6 59.12	2.5553	20 43 55.9	7.169
8	17 5 41.62	2.5665	23 29 52.9	0.202	8	19 9 32.36	2.5528	20 36 41.4	7.313
9	17 8 15.68	2.5688	23 30 0.3	-0.045	9	19 12 5.45	2.5502	20 29 18.3	7.457
10	17 10 49.88	2.5711	23 29 58.3	+0.113	10	19 14 38.38	2.5473	20 21 46.6	7.600
11	17 13 24.21	2.5731	23 29 46.8	0.972	11	19 17 11.13	2.5444	20 14 6.3	7.742
12	17 15 58.65	2.5750	23 29 25.7	0.831	12	19 19 43.71	2.5415	20 6 17.5	7.883
13	17 18 33.21	2.5769	23 28 55.1	0.690	13	19 22 16.11	2.5385	19 58 20.3	8.023
14	17 21 7.88	2.5786	23 28 14.9	0.749	14	19 24 48.33	2.5355	19 50 14.8	8.161
15	17 23 42.64	2.5802	23 27 25.2	0.908	15	19 27 20.37	2.5324	19 42 1.0	8.298
16	17 26 17.50	2.5817	23 26 25.9	1.068	16	19 29 52.22	2.5292	19 33 39.0	8.435
17	17 28 52.45	2.5831	23 25 17.0	1.228	17	19 32 23.87	2.5259	19 25 8.8	8.570
18	17 31 27.47	2.5844	23 23 58.5	1.388	18	19 34 55.33	2.5227	19 16 30.6	8.703
19	17 34 2.57	2.5856	23 22 30.4	1.549	19	19 37 26.59	2.5193	19 7 44.4	8.836
20	17 36 37.74	2.5867	23 20 52.6	1.710	20	19 39 57.64	2.5158	18 58 50.2	8.968
21	17 39 12.97	2.5876	23 19 5.2	1.870	21	19 42 28.49	2.5124	18 49 48.2	9.098
22	17 41 48.25	2.5884	23 17 8.2	2.031	22	19 44 59.13	2.5088	18 40 38.4	9.227
23	17 44 23.58	2.5891	23 15 1.5	2.192	23	19 47 29.55	2.5052	18 31 20.9	9.355
24	17 46 58.94	2.5897	S. 23° 12' 45.2"	2.352	24	19 49 59.76	2.5017	S. 18° 21' 55.8"	9.481

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 25.					SUNDAY 27.				
0	19 49 59.76	2.5017	S. 18° 21' 55.8"	9.481	0	21 45 30.10	2.3114	S. 8° 49' 55.5"	13.794
1	19 52 29.75	2.4980	18 12 23.2	9.606	1	21 47 48.68	2.3078	8 36 10.6	13.771
2	19 54 59.52	2.4943	18 2 43.1	9.730	2	21 50 7.04	2.3042	8 22 23.0	13.816
3	19 57 29.06	2.4905	17 52 55.6	9.852	3	21 52 25.18	2.3006	8 8 32.7	13.860
4	19 59 58.38	2.4867	17 43 0.8	9.973	4	21 54 43.11	2.2972	7 54 39.8	13.902
5	20 2 27.47	2.4829	17 32 58.8	10.092	5	21 57 0.84	2.2937	7 40 44.5	13.942
6	20 4 56.33	2.4791	17 22 49.7	10.210	6	21 59 18.36	2.2902	7 26 46.8	13.980
7	20 7 24.96	2.4752	17 12 33.6	10.327	7	22 1 35.67	2.2868	7 12 46.9	14.017
8	20 9 53.35	2.4712	17 2 10.5	10.443	8	22 3 52.78	2.2835	6 58 44.8	14.052
9	20 12 21.51	2.4673	16 51 40.5	10.557	9	22 6 9.69	2.2802	6 44 40.6	14.086
10	20 14 49.43	2.4633	16 41 3.7	10.668	10	22 8 26.40	2.2769	6 30 34.5	14.117
11	20 17 17.11	2.4594	16 30 20.3	10.778	11	22 10 42.92	2.2737	6 16 26.5	14.147
12	20 19 44.56	2.4555	16 19 30.3	10.887	12	22 12 59.24	2.2704	6 2 16.8	14.176
13	20 22 11.77	2.4514	16 8 33.8	10.995	13	22 15 15.37	2.2673	5 48 5.4	14.202
14	20 24 38.73	2.4473	15 57 30.9	11.102	14	22 17 31.32	2.2642	5 33 52.5	14.227
15	20 27 5.44	2.4432	15 46 21.6	11.207	15	22 19 47.08	2.2612	5 19 38.2	14.250
16	20 29 31.91	2.4391	15 35 6.1	11.309	16	22 22 2.66	2.2582	5 5 22.5	14.272
17	20 31 58.13	2.4350	15 23 44.5	11.410	17	22 24 18.06	2.2553	4 51 5.6	14.291
18	20 34 24.11	2.4309	15 12 16.9	11.510	18	22 26 33.28	2.2524	4 36 47.6	14.309
19	20 36 49.84	2.4268	15 0 43.3	11.608	19	22 28 48.33	2.2494	4 22 28.5	14.326
20	20 39 15.32	2.4227	14 49 3.9	11.705	20	22 31 3.21	2.2465	4 8 8.5	14.340
21	20 41 40.56	2.4186	14 37 18.7	11.800	21	22 33 17.91	2.2437	3 53 47.7	14.353
22	20 44 5.55	2.4144	14 25 27.9	11.893	22	22 35 32.45	2.2410	3 39 26.1	14.366
23	20 46 30.29	2.4103	S. 14° 13' 31.5"	11.985	23	22 37 46.83	2.2384	S. 3° 25' 3.8"	14.376
SATURDAY 26.					MONDAY 28.				
0	20 48 54.79	2.4062	S. 14° 1' 29.7"	12.075	0	22 40 1.06	2.2358	S. 3° 10' 41.0"	14.383
1	20 51 19.04	2.4021	13 49 22.5	12.163	1	22 42 15.13	2.2329	2 56 17.8	14.390
2	20 53 43.04	2.3979	13 37 10.1	12.249	2	22 44 29.04	2.2306	2 41 54.2	14.396
3	20 56 6.79	2.3938	13 24 52.6	12.334	3	22 46 42.80	2.2281	2 27 30.3	14.399
4	20 58 30.30	2.3897	13 12 30.0	12.418	4	22 48 56.41	2.2257	2 13 6.3	14.401
5	21 0 53.56	2.3857	13 0 2.4	12.500	5	22 51 9.88	2.2233	1 58 42.2	14.408
6	21 3 16.58	2.3816	12 47 30.0	12.579	6	22 53 23.21	2.2210	1 44 18.1	14.400
7	21 5 39.35	2.3775	12 34 52.9	12.657	7	22 55 36.40	2.2187	1 29 54.2	14.397
8	21 8 1.88	2.3734	12 22 11.1	12.734	8	22 57 49.45	2.2164	1 15 30.5	14.393
9	21 10 24.16	2.3693	12 9 24.8	12.809	9	23 0 2.37	2.2142	1 1 7.1	14.387
10	21 12 46.20	2.3654	11 56 34.0	12.882	10	23 2 15.16	2.2121	0 46 44.1	14.379
11	21 15 8.01	2.3614	11 43 38.9	12.953	11	23 4 27.82	2.2100	0 32 21.6	14.371
12	21 17 29.57	2.3573	11 30 39.6	13.023	12	23 6 40.36	2.2080	0 17 59.6	14.361
13	21 19 50.89	2.3534	11 17 36.2	13.091	13	23 8 52.78	2.2060	S. 0° 3' 38.3"	14.348
14	21 22 11.98	2.3495	11 4 28.7	13.157	14	23 11 5.08	2.2040	N. 0° 10' 42.2"	14.334
15	21 24 32.83	2.3455	10 51 17.3	13.222	15	23 13 17.26	2.2021	0 25 1.8	14.319
16	21 26 53.44	2.3416	10 38 2.1	13.284	16	23 15 29.33	2.2003	0 39 20.5	14.303
17	21 29 13.82	2.3377	10 24 43.2	13.346	17	23 17 41.30	2.1986	0 53 38.2	14.285
18	21 31 33.97	2.3339	10 11 20.6	13.406	18	23 19 53.16	2.1968	1 7 54.7	14.265
19	21 33 53.89	2.3301	9 57 54.5	13.463	19	23 22 4.91	2.1951	1 22 10.0	14.244
20	21 36 13.58	2.3263	9 44 25.1	13.518	20	23 24 16.57	2.1935	1 36 24.0	14.222
21	21 38 33.05	2.3226	9 30 52.4	13.572	21	23 26 28.13	2.1918	1 50 36.7	14.199
22	21 40 52.29	2.3188	9 17 16.5	13.624	22	23 28 39.59	2.1903	2 4 47.9	14.173
23	21 43 11.31	2.3151	9 3 37.5	13.675	23	23 30 50.97	2.1889	2 18 57.5	14.146
24	21 45 30.10	2.3114	S. 8° 49' 55.5"	13.724	24	23 33 2.26	2.1874	N. 2° 33' 5.4"	14.117

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

PHASES OF THE MOON.

	d	h	m
☾ First Quarter,	5	12	54.0
○ Full Moon,	13	18	23.7
☾ Last Quarter,	21	7	30.5
● New Moon,	27	23	32.6

	d	h
☾ Apogee,	10	0.6
☾ Perigee,	25	22.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	III ^h .	P. L. of Diff.	VI ^h .	P. L. of Diff.	IX ^h .	P. L. of Diff.
1	Sun W.	34 23 54	2500	36 3 3	2606	37 41 50	2694	39 20 15	2641
	Saturn E.	37 17 58	2357	35 33 22	2383	33 49 23	2410	32 6 3	2439
	α Arietis E.	48 53 2	2987	47 6 44	2307	45 20 55	2398	43 35 36	2449
	Aldebaran E.	81 47 53	2879	80 1 22	2906	78 15 16	2314	76 29 37	2338
2	Sun W.	47 25 59	2735	49 1 52	2755	50 37 19	2775	52 12 19	2795
	α Arietis E.	34 56 58	2408	33 14 57	2499	31 33 33	2580	29 52 47	2549
	Aldebaran E.	67 48 6	2498	66 5 11	2448	64 22 45	2468	62 40 47	2488
	Pollux E.	109 39 13	2447	107 56 45	2465	106 14 43	2483	104 33 6	2501
3	Sun W.	60 0 49	2996	61 33 13	2916	63 5 12	2935	64 36 46	2956
	α Pegasi W.	26 38 56	2980	28 3 31	2992	29 29 14	3176	30 55 52	3139
	Aldebaran E.	54 18 5	2599	52 38 59	2613	51 0 22	2635	49 22 14	2656
	Pollux E.	96 11 23	2593	94 32 19	2619	92 53 41	2631	91 15 28	2649
4	Sun W.	72 8 22	3059	73 37 30	3071	75 6 15	3090	76 34 37	3108
	α Pegasi W.	38 17 22	3048	39 46 35	3043	41 15 55	3039	42 45 20	3036
	Venus W.	26 34 1	3154	28 1 5	3165	29 27 56	3178	30 54 32	3190
	Aldebaran E.	41 18 49	2766	39 43 36	2788	38 8 53	2819	36 34 41	2835
	Pollux E.	83 10 33	2741	81 34 47	2758	79 59 24	2775	78 24 24	2799
5	Sun W.	83 51 8	3193	85 17 26	3209	86 43 25	3225	88 9 5	3241
	α Pegasi W.	50 12 26	3047	51 41 40	3052	53 10 48	3058	54 39 49	3064
	Venus W.	38 3 44	3255	39 28 48	3269	40 53 36	3282	42 18 9	3294
	Jupiter W.	25 23 10	3005	26 53 16	3008	28 23 19	3011	29 53 18	3016
	Aldebaran E.	28 51 37	2969	27 20 45	3000	25 50 32	3035	24 21 3	3073
	Pollux E.	70 34 56	2976	69 2 7	2992	67 29 38	2998	65 57 29	2993
	Regulus E.	107 23 30	2935	105 49 47	2949	104 16 23	2963	102 43 17	2977
6	Sun W.	95 13 6	3310	96 37 6	3322	98 0 52	3333	99 24 25	3345
	α Pegasi W.	62 3 1	3096	63 31 15	3103	64 59 21	3110	66 27 18	3117
	Venus W.	49 17 14	3355	50 40 22	3366	52 3 17	3377	53 26 0	3386
	Jupiter W.	37 21 22	3051	38 50 32	3058	40 19 33	3066	41 48 24	3073
	Saturn W.	29 43 55	3078	31 12 32	3078	32 41 9	3079	34 9 44	3089
	α Arietis W.	18 26 57	3155	19 54 0	3135	21 21 27	3190	22 49 12	3110
	Pollux E.	58 21 29	2996	56 51 11	3010	55 21 11	3095	53 51 29	3039
	Regulus E.	95 2 0	2939	93 30 31	2950	91 59 16	2969	90 28 15	2973
7	Sun W.	106 18 58	3397	107 41 18	3405	109 3 29	3414	110 25 30	3422
	α Pegasi W.	73 45 5	3149	75 12 15	3155	76 39 18	3160	78 6 15	3165
	Venus W.	60 16 50	3432	61 38 30	3439	63 0 2	3447	64 21 25	3454
	Jupiter W.	49 10 26	3109	50 38 25	3114	52 6 17	3121	53 34 1	3127
	Saturn W.	41 31 40	3101	42 59 49	3105	44 27 53	3109	45 55 52	3112
	α Arietis W.	30 10 0	3094	31 38 17	3094	33 6 34	3095	34 34 50	3096
	Pollux E.	46 27 6	3105	44 59 2	3118	43 31 14	3132	42 3 43	3146
	Regulus E.	82 56 19	3018	81 26 29	3026	79 56 49	3034	78 27 19	3041
8	Sun W.	117 13 30	3454	118 34 45	3460	119 55 54	3464	121 16 58	3469
	Venus W.	71 6 36	3482	72 27 20	3486	73 48 0	3489	75 8 36	3492
	Jupiter W.	60 51 5	3150	62 18 14	3154	63 45 18	3158	65 12 18	3161
	Saturn W.	53 14 40	3139	54 42 14	3133	56 9 44	3135	57 37 11	3137
	α Arietis W.	41 55 42	3105	43 23 46	3106	44 51 48	3108	46 19 48	3109
	Pollux E.	34 50 27	3222	33 24 44	3241	31 59 23	3261	30 34 26	3283

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVb.	P. L. of Diff.	XVIIIb.	P. L. of Diff.	XXIb.	P. L. of Diff.
1	SUN	W.	40° 58' 12"	9359	42° 35' 47"	9378	44° 12' 57"	9397	45° 49' 41"	9716
	Saturn	E.	30 23 24	9471	28 41 30	9505	27 0 24	9543	25 20 11	9585
	α Arietis	E.	41 50 48	9371	40 6 31	9393	38 22 46	9417	36 39 35	9441
	Aldebaran	E.	74 44 24	9350	72 59 38	9370	71 15 20	9389	69 31 29	9408
2	SUN	W.	53 46 53	9815	55 21 1	9835	56 54 43	9855	58 27 59	9876
	α Arietis	E.	28 12 42	9580	26 33 26	9614	24 54 44	9650	23 16 57	9691
	Aldebaran	E.	60 59 17	9509	59 18 16	9530	57 37 44	9550	55 57 40	9571
	Pollux	E.	102 51 54	9590	101 11 8	9538	99 30 47	9556	97 50 52	9575
3	SUN	W.	66 7 54	9978	67 38 37	9995	69 8 56	3014	70 38 51	3034
	α Pegasi	W.	33 23 14	3110	33 51 11	3088	35 19 35	3071	36 48 20	3057
	Aldebaran	E.	47 44 35	9878	46 7 25	9899	44 30 44	9791	42 54 32	9743
	Pollux	E.	89 37 40	9868	88 0 17	9895	86 23 18	9794	84 46 43	9729
4	SUN	W.	78 2 37	3125	79 30 16	3143	80 57 34	3160	82 24 31	3177
	α Pegasi	W.	44 14 48	3036	45 44 16	3037	47 13 43	3039	48 43 7	3043
	Venus	W.	32 20 53	3903	33 46 59	3915	35 12 50	3939	36 38 25	3942
	Aldebaran	E.	35 0 59	9859	33 27 48	9885	31 55 10	9812	30 23 6	9839
	Pollux	E.	76 49 46	9810	75 15 31	9827	73 41 38	9843	72 8 6	9860
5	SUN	W.	89 34 26	3255	90 59 30	3269	92 24 18	3282	93 48 50	3296
	α Pegasi	W.	56 8 43	3070	57 37 29	3076	59 6 8	3082	60 34 39	3090
	Venus	W.	43 42 27	3307	45 6 30	3319	46 30 19	3339	47 53 53	3344
	Jupiter	W.	31 23 11	3093	32 52 56	3099	34 22 33	3035	35 52 2	3043
	Aldebaran	E.	22 52 20	3115	21 24 29	3164	19 57 37	3292	18 31 54	3291
	Pollux	E.	64 25 39	2939	62 54 9	2954	61 22 58	2968	59 52 5	2981
	Regulus	E.	101 10 29	2991	99 37 58	2903	98 5 43	2916	96 33 44	2927
6	SUN	W.	100 47 45	3356	102 10 52	3367	103 33 46	3378	104 56 28	3388
	α Pegasi	W.	67 55 7	3194	69 22 48	3130	70 50 21	3136	72 17 47	3143
	Venus	W.	54 48 32	3397	56 10 52	3406	57 33 2	3415	58 55 1	3494
	Jupiter	W.	43 17 6	3081	44 45 39	3088	46 14 3	3095	47 42 19	3109
	Saturn	W.	35 38 16	3085	37 6 44	3089	38 35 7	3092	40 3 26	3096
	α Arietis	W.	24 17 10	3103	25 45 16	3098	27 13 28	3096	28 41 43	3094
	Pollux	E.	52 22 4	3052	50 52 55	3065	49 24 2	3078	47 55 26	3091
	Regulus	E.	88 57 28	2962	87 26 53	2992	85 56 30	3001	84 26 19	3010
7	SUN	W.	111 47 22	3430	113 9 5	3437	114 30 40	3443	115 52 8	3448
	α Pegasi	W.	79 33 6	3170	80 59 51	3176	82 26 29	3181	83 53 1	3185
	Venus	W.	65 42 40	3461	67 3 48	3466	68 24 50	3471	69 45 46	3477
	Jupiter	W.	55 1 38	3133	56 29 8	3138	57 56 32	3142	59 23 51	3146
	Saturn	W.	47 23 47	3116	48 51 37	3120	50 19 22	3124	51 47 3	3127
	α Arietis	W.	36 3 5	3097	37 31 18	3100	38 59 28	3101	40 27 36	3103
	Pollux	E.	40 36 20	3160	39 9 32	3174	37 42 52	3189	36 16 30	3205
	Regulus	E.	76 57 57	3048	75 28 44	3054	73 59 38	3060	72 30 40	3066
8	SUN	W.	122 37 57	3473	123 58 51	3477	125 19 41	3480	126 40 28	3483
	Venus	W.	76 29 9	3495	77 49 39	3497	79 10 6	3500	80 30 30	3502
	Jupiter	W.	66 39 14	3163	68 6 7	3165	69 32 58	3168	70 59 46	3169
	Saturn	W.	59 4 36	3138	60 31 59	3140	61 59 20	3142	63 26 39	3143
	α Arietis	W.	47 47 47	3110	49 15 45	3111	50 43 41	3112	52 11 36	3112
	Pollux	E.	29 9 55	3307	27 45 52	3334	26 22 20	3365	24 59 24	3403

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LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
8	Regulus E.	71° 1' 45"	3071	69° 33' 4"	3075	68° 4' 24"	3080	66° 35' 50"	3084
9	Sun W.	128 1 11	3486	120 21 51	3488	130 42 29	3489	132 3 5	3490
	Venus W.	81 50 52	3503	83 11 13	3503	84 31 34	3504	85 51 54	3505
	Jupiter W.	72 26 32	3171	73 53 16	3171	75 20 0	3172	76 46 43	3173
	Saturn W.	64 53 57	3143	66 21 14	3144	67 48 30	3144	69 15 46	3143
	α Arietis W.	53 39 31	3113	55 7 25	3112	56 35 20	3112	58 3 15	3111
	Aldebaran W.	21 25 59	3319	22 49 49	3322	24 14 10	3323	25 38 58	3325
	Regulus E.	59 14 5	3099	57 45 54	3101	56 17 45	3102	54 49 38	3104
	Spica E.	113 12 28	3082	111 43 56	3082	110 15 25	3082	108 46 54	3082
10	Venus W.	92 33 38	3499	93 54 3	3497	95 14 30	3495	96 35 0	3492
	Jupiter W.	84 0 21	3169	85 27 7	3168	86 53 55	3165	88 20 46	3163
	Saturn W.	76 32 18	3139	77 59 40	3137	79 27 5	3135	80 54 32	3133
	α Arietis W.	65 23 7	3105	66 51 11	3103	68 19 17	3101	69 47 26	3098
	Aldebaran W.	32 47 38	3186	34 14 4	3177	35 40 41	3167	37 7 30	3158
	Regulus E.	47 29 23	3107	46 1 22	3107	44 33 21	3108	43 5 21	3107
	Spica E.	101 24 20	3081	99 55 47	3079	98 27 12	3078	96 58 35	3075
11	Venus W.	103 18 20	3475	104 39 12	3471	106 0 9	3466	107 21 11	3462
	Jupiter W.	95 35 40	3149	97 2 50	3146	98 30 4	3143	99 57 22	3139
	Saturn W.	88 12 34	3119	89 40 21	3114	91 8 13	3110	92 36 10	3107
	α Arietis W.	77 9 2	3082	78 37 33	3078	80 6 9	3074	81 34 50	3070
	Aldebaran W.	44 23 54	3123	45 51 36	3118	47 19 26	3109	48 47 25	3102
	Regulus E.	35 45 16	3107	34 17 15	3107	32 49 14	3108	31 21 14	3110
	Spica E.	89 34 44	3061	88 5 47	3057	86 36 45	3054	85 7 39	3050
12	Jupiter W.	107 15 3	3118	108 42 51	3113	110 10 45	3108	111 38 45	3103
	Saturn W.	99 57 7	3085	101 25 35	3080	102 54 9	3075	104 22 49	3071
	α Arietis W.	88 59 35	3047	90 28 49	3042	91 58 10	3037	93 27 37	3031
	Aldebaran W.	56 9 20	3089	57 38 7	3083	59 7 2	3056	60 36 6	3049
	Spica E.	77 40 51	3097	76 11 12	3092	74 41 26	3017	73 11 34	3012
13	Aldebaran W.	68 3 28	3015	69 33 22	3009	71 3 24	3001	72 33 35	2994
	Pollux W.	26 58 58	3231	28 24 30	3201	29 50 38	3175	31 17 17	3152
	Spica E.	65 40 34	2983	64 10 0	2977	62 39 18	2971	61 8 29	2965
	Antares E.	111 12 30	2985	109 41 58	2979	108 11 19	2973	106 40 32	2965
14	Aldebaran W.	80 6 42	2959	81 37 46	2952	83 8 59	2945	84 40 21	2937
	Pollux W.	38 36 56	3059	40 5 56	3043	41 35 15	3029	43 4 52	3016
	Spica E.	53 32 24	2933	52 0 47	2926	50 29 1	2919	48 57 6	2912
	Antares E.	99 4 29	2932	97 32 51	2925	96 1 4	2919	94 29 9	2912
15	Aldebaran W.	92 19 31	2901	93 51 48	2894	95 24 15	2887	96 56 51	2879
	Pollux W.	50 36 53	2956	52 8 1	2945	53 39 23	2934	55 10 59	2924
	Spica E.	41 15 24	2879	39 42 38	2872	38 9 43	2865	36 36 39	2859
	Antares E.	86 47 15	2875	85 14 24	2868	83 41 24	2860	82 8 14	2853
16	Aldebaran W.	104 42 15	2842	106 15 48	2835	107 49 31	2827	109 23 24	2820
	Pollux W.	62 52 14	2873	64 25 7	2864	65 58 12	2855	67 31 29	2845
	Regulus W.	25 50 45	2891	27 23 16	2874	28 56 8	2859	30 29 19	2845
	Spica E.	28 49 11	2825	27 15 16	2820	25 41 14	2815	24 7 5	2810
	Antares E.	74 19 58	2815	72 45 49	2807	71 11 30	2799	69 37 1	2791

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Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
8	Regulus	E.	65° 7' 21"	3088	63° 38' 57"	3091	62° 10' 36"	3094	60° 42' 19"	3096
9	Sun	W.	133 23 40	3493	134 44 13	3493	136 4 45	3494	137 25 16	3495
	Venus	W.	87 12 13	3505	88 32 32	3504	89 52 52	3502	91 13 14	3500
	Jupiter	W.	78 13 26	3173	79 40 9	3172	81 6 52	3171	82 33 36	3170
	Saturn	W.	70 43 3	3143	72 10 21	3143	73 37 39	3142	75 4 58	3141
	α Arietis	W.	59 31 11	3111	60 59 7	3110	62 27 5	3108	63 55 5	3106
	Aldebaran	W.	27 4 8	3234	28 29 37	3230	29 55 23	3207	31 21 24	3196
	Regulus	E.	53 21 33	3105	51 53 29	3105	50 25 26	3106	48 57 24	3107
	Spica	E.	107 18 23	3083	105 49 53	3083	104 21 23	3082	102 52 52	3082
10	Venus	W.	97 55 33	3488	99 16 10	3486	100 36 50	3483	101 57 33	3480
	Jupiter	W.	89 47 39	3162	91 14 34	3159	92 41 32	3156	94 8 34	3153
	Saturn	W.	82 22 2	3130	83 49 35	3128	85 17 11	3124	86 44 51	3122
	α Arietis	W.	71 15 38	3096	72 43 53	3092	74 12 12	3089	75 40 35	3086
	Aldebaran	W.	38 34 29	3151	40 1 37	3143	41 28 54	3136	42 56 20	3129
	Regulus	E.	41 37 20	3107	40 9 19	3107	38 41 18	3107	37 13 17	3107
	Spica	E.	95 29 55	3073	94 1 12	3070	92 32 26	3068	91 3 37	3065
11	Venus	W.	108 42 18	3457	110 3 30	3452	111 24 48	3446	112 46 12	3441
	Jupiter	W.	101 24 44	3135	102 52 11	3131	104 19 43	3127	105 47 20	3122
	Saturn	W.	94 4 11	3103	95 32 17	3099	97 0 28	3094	98 28 45	3090
	α Arietis	W.	83 3 36	3066	84 32 27	3061	86 1 24	3056	87 30 27	3052
	Aldebaran	W.	50 15 32	3096	51 43 47	3089	53 12 10	3082	54 40 41	3076
	Regulus	E.	29 53 16	3111	28 25 20	3114	26 57 27	3118	25 29 39	3123
	Spica	E.	83 38 28	3046	82 9 12	3042	80 39 51	3037	79 10 24	3032
12	Jupiter	W.	113 6 51	3098	114 35 3	3093	116 3 21	3088	117 31 45	3083
	Saturn	W.	105 51 34	3066	107 20 25	3060	108 49 23	3055	110 18 28	3049
	α Arietis	W.	94 57 11	3096	96 26 51	3091	97 56 38	3015	99 26 32	3009
	Aldebaran	W.	62 5 18	3043	63 34 38	3036	65 4 6	3029	66 33 43	3022
	Spica	E.	71 41 36	3006	70 11 31	3001	68 41 19	2995	67 11 0	2989
13	Aldebaran	W.	74 3 55	2987	75 34 24	2981	77 5 1	2973	78 35 47	2966
	Pollux	W.	32 44 24	3130	34 11 57	3110	35 39 55	3091	37 8 15	3074
	Spica	E.	59 37 32	2958	58 6 27	2952	56 35 14	2946	55 3 53	2939
	Antares	E.	105 9 36	2959	103 38 32	2952	102 7 19	2946	100 35 58	2939
14	Aldebaran	W.	86 11 53	2930	87 43 34	2923	89 15 24	2916	90 47 23	2909
	Pollux	W.	44 34 45	3003	46 4 54	2990	47 35 19	2978	49 5 59	2967
	Spica	E.	47 25 3	2905	45 52 51	2899	44 20 31	2892	42 48 2	2885
	Antares	E.	92 57 5	2905	91 24 52	2897	89 52 29	2890	88 19 57	2882
15	Aldebaran	W.	98 29 37	2872	100 2 32	2864	101 35 37	2857	103 8 51	2849
	Pollux	W.	56 42 48	2913	58 14 50	2903	59 47 5	2893	61 19 33	2883
	Spica	E.	35 3 27	2852	33 30 6	2845	31 56 36	2838	30 22 58	2831
	Antares	E.	80 34 55	2845	79 1 25	2838	77 27 46	2830	75 53 57	2822
16	Aldebaran	W.	110 57 26	2812	112 31 38	2805	114 5 59	2798	115 40 30	2790
	Pollux	W.	69 4 59	2835	70 38 41	2826	72 12 35	2817	73 46 41	2807
	Regulus	W.	32 2 49	2831	33 36 36	2819	35 10 39	2807	36 44 58	2795
	Spica	E.	22 32 50	2805	20 58 29	2801	19 24 3	2796	17 49 33	2797
	Antares	E.	68 2 21	2789	66 27 30	2775	64 52 29	2766	63 17 17	2759

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Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
17	Pollux W.	75° 21' 0"	2798	76° 55' 31"	2789	78° 30' 13"	2780	80° 5' 7"	2770
	Regulus W.	38 19 33	2783	39 54 23	2772	41 29 27	2762	43 4 45	2750
	Antares E.	61 41 55	2750	60 6 22	2742	58 30 38	2734	56 54 43	2725
	Mars E.	109 13 25	3015	107 43 31	3006	106 13 26	2997	104 43 10	2989
	α Aquilæ E.	113 14 37	3310	111 50 37	3299	110 26 13	3270	109 1 26	3251
	Sun E.	142 33 29	3134	141 6 1	3124	139 38 20	3119	138 10 25	3101
18	Pollux W.	88 2 43	2794	89 38 51	2714	91 15 12	2705	92 51 45	2696
	Regulus W.	51 4 51	2698	52 41 34	2687	54 18 31	2677	55 55 42	2666
	Antares E.	48 52 17	2683	47 15 14	2674	45 37 59	2665	44 0 32	2656
	Mars E.	97 8 54	2940	95 37 26	2931	94 5 46	2920	92 33 53	2911
	α Aquilæ E.	101 52 11	3167	100 25 22	3159	98 58 15	3138	97 30 51	3125
	Sun E.	130 47 29	3046	129 18 13	3035	127 48 44	3024	126 19 1	3013
19	Pollux W.	100 57 38	2649	102 35 26	2640	104 13 27	2629	105 51 42	2620
	Regulus W.	64 5 11	2614	65 43 47	2603	67 22 38	2592	69 1 44	2581
	Antares E.	35 50 19	2613	34 11 41	2604	32 32 52	2596	30 53 52	2588
	Mars E.	84 51 15	2959	83 18 3	2948	81 44 37	2938	80 10 58	2927
	α Aquilæ E.	90 10 8	3068	88 41 19	3059	87 12 19	3049	85 43 7	3041
	Sun E.	118 46 56	2957	117 15 49	2945	115 44 27	2934	114 12 51	2922
20	Regulus W.	77 20 59	2598	79 1 36	2515	80 42 28	2504	82 23 36	2492
	Spica W.	23 18 10	2533	24 58 38	2519	26 39 25	2506	28 20 30	2493
	Mars E.	72 19 9	2772	70 44 4	2760	69 8 43	2748	67 33 7	2737
	α Aquilæ E.	78 14 49	3009	76 44 48	3005	75 14 42	3002	73 44 32	3000
	Sun E.	106 31 6	2992	104 57 59	2981	103 24 37	2968	101 50 59	2957
21	Regulus W.	90 53 14	2436	92 35 58	2424	94 18 58	2413	96 2 14	2401
	Spica W.	36 50 26	2430	38 33 18	2417	40 16 28	2405	41 59 55	2394
	Mars E.	59 31 20	2679	57 54 12	2668	56 16 49	2656	54 39 10	2645
	α Aquilæ E.	66 13 28	3006	64 43 23	3019	63 13 25	3019	61 43 36	3008
	Sun E.	93 58 52	2765	92 23 38	2753	90 48 8	2741	89 12 22	2728
22	Regulus W.	104 42 40	2245	106 27 34	2234	108 12 44	2224	109 58 9	2213
	Spica W.	50 41 28	2234	52 26 38	2222	54 12 5	2211	55 57 49	2200
	Mars E.	46 27 7	2589	44 47 57	2579	43 8 33	2568	41 28 54	2558
	α Aquilæ E.	54 18 17	3111	52 50 21	3137	51 22 56	3168	49 56 8	3204
	Sun E.	81 9 23	2666	79 31 58	2655	77 54 17	2643	76 16 21	2632
23	Spica W.	64 50 34	2245	66 37 54	2235	68 25 30	2225	70 13 21	2214
	Antares W.	19 28 24	2294	21 14 33	2275	23 1 9	2259	24 48 9	2244
	Mars E.	33 7 21	2514	31 26 27	2507	29 45 24	2502	28 4 13	2497
	α Aquilæ E.	42 54 52	3477	41 34 2	3558	40 14 42	3652	38 57 4	3762
	Sun E.	68 2 43	2574	66 23 13	2565	64 43 30	2555	63 3 33	2545
24	Spica W.	79 16 10	2170	81 5 23	2162	82 54 48	2155	84 44 24	2147
	Antares W.	33 48 6	2186	35 36 55	2176	37 25 59	2167	39 15 16	2159
	Sun E.	54 40 31	2501	52 59 19	2494	51 17 57	2487	49 36 25	2481
25	Spica W.	93 54 55	2118	95 45 26	2114	97 36 4	2110	99 26 48	2107
	Antares W.	48 24 35	2126	50 14 55	2120	52 5 23	2116	53 55 58	2113
	Sun E.	41 6 53	2460	39 24 43	2458	37 42 30	2457	36 0 16	2458

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Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
17	Pollux W.	81° 40' 14"	2761	83° 15' 33"	2752	84° 51' 4"	2743	86° 26' 47"	2733
	Regulus W.	44 40 18	2740	46 16 5	2729	47 52 6	2718	49 28 22	2708
	Antares E.	55 18 36	2716	53 42 18	2708	52 5 49	2700	50 29 9	2691
	Mars E.	103 12 43	2679	101 42 4	2669	100 11 13	2660	98 40 10	2650
	α Aquilæ E.	107 36 17	2632	106 10 46	2614	104 44 54	2598	103 18 42	2582
	Sun E.	136 42 17	2090	135 13 55	2079	133 45 20	2068	132 16 31	2057
18	Pollux W.	94 28 30	2687	96 5 28	2677	97 42 39	2668	99 20 2	2658
	Regulus W.	57 33 8	2656	59 10 47	2645	60 48 41	2635	62 26 49	2624
	Antares E.	42 22 53	2647	40 45 2	2638	39 6 59	2630	37 28 45	2621
	Mars E.	91 1 48	2601	89 29 30	2590	87 56 58	2580	86 24 13	2569
	α Aquilæ E.	96 3 12	2512	94 35 17	2501	93 7 8	2489	91 38 45	2478
	Sun E.	124 49 4	2001	123 18 53	2000	121 48 28	2079	120 17 49	2068
19	Pollux W.	107 30 10	2611	109 8 50	2601	110 47 43	2592	112 26 49	2583
	Regulus W.	70 41 5	2570	72 20 41	2559	74 0 32	2548	75 40 38	2538
	Antares E.	29 14 40	2580	27 35 18	2572	25 55 45	2566	24 16 3	2561
	Mars E.	78 37 5	2615	77 2 57	2605	75 28 35	2594	73 53 59	2583
	α Aquilæ E.	84 13 45	2633	82 44 13	2626	81 14 32	2620	79 44 44	2614
	Sun E.	112 41 0	2610	111 8 54	2608	109 36 33	2587	108 3 57	2575
20	Regulus W.	84 5 0	2481	85 46 40	2470	87 28 35	2459	89 10 46	2447
	Spica W.	30 1 53	2480	31 43 35	2467	33 25 35	2455	35 7 52	2443
	Mars E.	65 57 16	2725	64 21 10	2714	62 44 49	2702	61 8 12	2691
	α Aquilæ E.	72 14 19	2699	70 44 5	2689	69 13 51	2680	67 43 38	2669
	Sun E.	100 17 6	2615	98 42 57	2602	97 8 32	2589	95 33 50	2577
21	Regulus W.	97 45 47	2390	99 29 36	2379	101 13 41	2368	102 58 2	2356
	Spica W.	43 43 39	2382	45 27 40	2369	47 11 59	2357	48 56 35	2346
	Mars E.	53 1 16	2634	51 23 7	2622	49 44 42	2611	48 6 2	2600
	α Aquilæ E.	60 13 58	2639	58 44 34	2623	57 15 27	2609	55 46 40	2599
	Sun E.	87 36 19	2716	86 0 0	2703	84 23 24	2691	82 46 32	2678
22	Regulus W.	111 43 50	2302	113 29 47	2291	115 15 59	2282	117 2 25	2272
	Spica W.	57 43 50	2288	59 30 7	2277	61 16 40	2266	63 3 29	2256
	Mars E.	39 49 1	2548	38 8 54	2539	36 28 35	2530	34 48 4	2522
	α Aquilæ E.	48 30 3	2644	47 4 46	2630	45 40 23	2624	44 17 2	2606
	Sun E.	74 38 9	2690	72 59 41	2608	71 20 57	2597	69 41 58	2585
23	Spica W.	72 1 27	2205	73 49 47	2196	75 38 21	2186	77 27 9	2178
	Antares W.	26 35 31	2231	28 23 13	2218	30 11 14	2206	31 59 32	2196
	Mars E.	26 22 55	2493	24 41 32	2492	23 0 7	2492	21 18 42	2486
	α Aquilæ E.	37 41 22	2388	36 27 50	2373	35 16 43	2362	34 8 19	2350
	Sun E.	61 23 22	2535	59 42 58	2526	58 2 21	2517	56 21 32	2509
24	Spica W.	86 34 11	2141	88 24 8	2134	90 14 15	2128	92 4 31	2123
	Antares W.	41 4 46	2151	42 54 27	2143	44 44 20	2137	46 34 23	2131
	Sun E.	47 54 45	2475	46 12 57	2470	44 31 1	2465	42 48 59	2462
25	Spica W.	101 17 37	2104	103 8 30	2102	104 59 26	2100	106 50 25	2099
	Antares W.	55 46 38	2109	57 37 23	2107	59 28 12	2105	61 19 4	2103
	Sun E.	34 18 3	2459	32 35 52	2462	30 53 45	2466	29 11 44	2471

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.			
Tues.	1	^h 22 ^m 50 ^s 12.75	9.355	S. 7° 24' 41.3"	+57.11	16 10.27	65.39	^m 12 28.10	^s 0.500
Wed.	2	22 53 57.01	9.335	7 1 47.4	57.36	16 10.03	65.32	12 15.85	0.520
Thur.	3	22 57 40.79	9.315	6 38 47.7	57.61	16 9.78	65.26	12 3.10	0.540
Frid.	4	23 1 24.10	9.296	6 15 42.6	57.82	16 9.53	65.19	11 49.89	0.559
Sat.	5	23 5 6.95	9.277	5 52 32.4	58.02	16 9.28	65.13	11 36.23	0.578
Sun.	6	23 8 49.36	9.258	5 29 17.5	58.20	16 9.03	65.07	11 22.13	0.596
Mon.	7	23 12 31.35	9.241	5 5 58.3	58.38	16 8.78	65.01	11 7.61	0.613
Tues.	8	23 16 12.98	9.225	4 42 35.2	58.53	16 8.54	64.95	10 52.68	0.629
Wed.	9	23 19 54.12	9.208	4 19 8.7	58.67	16 8.27	64.90	10 37.36	0.646
Thur.	10	23 23 34.95	9.194	3 55 39.0	58.80	16 8.03	64.85	10 21.67	0.660
Frid.	11	23 27 15.43	9.180	3 32 6.5	58.90	16 7.77	64.80	10 5.64	0.674
Sat.	12	23 30 55.60	9.167	3 8 31.6	58.99	16 7.51	64.76	9 49.29	0.687
Sun.	13	23 34 35.46	9.156	2 44 54.7	59.08	16 7.24	64.72	9 32.65	0.698
Mon.	14	23 38 15.06	9.145	2 21 16.0	59.14	16 6.98	64.68	9 15.74	0.709
Tues.	15	23 41 54.40	9.135	1 57 36.0	59.19	16 6.71	64.65	8 58.58	0.719
Wed.	16	23 45 33.52	9.126	1 33 54.9	59.23	16 6.44	64.62	8 41.19	0.728
Thur.	17	23 49 12.43	9.117	1 10 13.1	59.25	16 6.16	64.58	8 23.60	0.737
Frid.	18	23 52 51.17	9.110	0 46 31.0	59.25	16 5.89	64.56	8 5.83	0.744
Sat.	19	23 56 29.74	9.104	S. 0 22 49.0	59.23	16 5.61	64.54	7 47.90	0.750
Sun.	20	0 0 8.18	9.100	N. 0 0 52.7	59.20	16 5.33	64.52	7 29.84	0.754
Mon.	21	0 3 46.52	9.096	0 24 33.7	59.17	16 5.05	64.50	7 11.68	0.758
Tues.	22	0 7 24.77	9.092	0 48 13.6	59.13	16 4.77	64.49	6 53.43	0.762
Wed.	23	0 11 2.97	9.090	1 11 52.2	59.07	16 4.49	64.48	6 35.11	0.764
Thur.	24	0 14 41.11	9.089	1 35 29.0	58.99	16 4.21	64.47	6 16.75	0.765
Frid.	25	0 18 19.22	9.088	1 59 3.6	58.90	16 3.93	64.46	5 58.38	0.766
Sat.	26	0 21 57.33	9.088	2 22 35.7	58.78	16 3.65	64.46	5 39.99	0.766
Sun.	27	0 25 35.47	9.089	2 46 4.8	58.65	16 3.36	64.47	5 21.62	0.765
Mon.	28	0 29 13.62	9.090	3 9 30.7	58.50	16 3.08	64.47	5 3.27	0.764
Tues.	29	0 32 51.81	9.092	3 32 52.8	58.35	16 2.80	64.48	4 44.95	0.762
Wed.	30	0 36 30.06	9.095	3 56 11.0	58.17	16 2.52	64.49	4 26.70	0.759
Thur.	31	0 40 8.40	9.099	4 19 24.8	57.97	16 2.25	64.51	4 8.54	0.755
Frid.	32	0 43 46.84	9.103	N. 4 42 33.8	+57.77	16 1.97	64.52	3 50.48	0.751

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sidereal Time.

+ prefixed to the hourly change of declination indicates that the south declinations are decreasing; the north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be subtracted from Mean Time.	Diff. for 1 hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
		^h ^m ^s	^s	S. [°] ['] ["]		^m ^s	^s	^h ^m ^s
Tues.	1	22 50 10.80	9.356	S. 7 24 53.2	+57.12	12 28.20	0.500	22 37 42.60
Wed.	2	22 53 55.10	9.336	7 1 59.2	57.37	12 15.95	0.520	22 41 39.16
Thur.	3	22 57 38.92	9.316	6 38 59.3	57.62	12 3.21	0.540	22 45 35.71
Frid.	4	23 1 22.27	9.297	6 15 54.0	57.83	11 50.00	0.559	22 49 32.27
Sat.	5	23 5 5.16	9.278	5 52 43.6	58.03	11 36.34	0.578	22 53 28.82
Sun.	6	23 8 47.61	9.260	5 29 28.5	58.21	11 22.24	0.596	22 57 25.37
Mon.	7	23 12 29.64	9.243	5 6 9.1	58.39	11 7.72	0.613	23 1 21.92
Tues.	8	23 16 11.26	9.227	4 42 45.8	58.54	10 52.79	0.629	23 5 18.47
Wed.	9	23 19 52.49	9.210	4 19 19.0	58.68	10 37.47	0.646	23 9 15.02
Thur.	10	23 23 33.36	9.196	3 55 49.1	58.81	10 21.78	0.660	23 13 11.58
Frid.	11	23 27 13.88	9.182	3 32 16.4	58.91	10 5.75	0.674	23 17 8.13
Sat.	12	23 30 54.09	9.169	3 8 41.3	59.00	9 49.40	0.687	23 21 4.69
Sun.	13	23 34 34.00	9.158	2 45 4.1	59.09	9 32.76	0.698	23 25 1.24
Mon.	14	23 38 13.64	9.147	2 21 25.1	59.15	9 15.85	0.709	23 28 57.79
Tues.	15	23 41 53.03	9.137	1 57 44.8	59.20	8 58.69	0.719	23 32 54.34
Wed.	16	23 45 32.19	9.128	1 34 3.4	59.24	8 41.30	0.728	23 36 50.89
Thur.	17	23 49 11.15	9.119	1 10 21.4	59.26	8 23.71	0.737	23 40 47.44
Frid.	18	23 52 49.93	9.112	0 46 39.0	59.26	8 5.93	0.744	23 44 44.00
Sat.	19	23 56 28.55	9.106	S. 0 22 56.7	59.24	7 48.00	0.750	23 48 40.55
Sun.	20	0 0 7.04	9.102	N. 0 0 45.3	59.21	7 29.94	0.754	23 52 37.10
Mon.	21	0 3 45.43	9.098	0 24 26.6	59.18	7 11.78	0.758	23 56 33.65
Tues.	22	0 7 23.73	9.094	0 48 6.8	59.14	6 53.52	0.762	0 0 30.21
Wed.	23	0 11 1.97	9.092	1 11 45.7	59.08	6 35.21	0.764	0 4 26.76
Thur.	24	0 14 40.16	9.091	1 35 22.8	59.00	6 16.85	0.765	0 8 23.31
Frid.	25	0 18 18.32	9.090	1 58 57.7	58.91	5 58.46	0.766	0 12 19.86
Sat.	26	0 21 56.48	9.090	2 22 30.1	58.79	5 40.06	0.766	0 16 16.42
Sun.	27	0 25 34.66	9.091	2 45 59.5	58.66	5 21.69	0.765	0 20 12.97
Mon.	28	0 29 12.86	9.092	3 9 25.7	58.51	5 3.34	0.764	0 24 9.52
Tues.	29	0 32 51.09	9.094	3 32 48.1	58.36	4 45.02	0.762	0 28 6.07
Wed.	30	0 36 29.39	9.097	3 56 6.6	58.18	4 26.76	0.760	0 32 2.63
Thur.	31	0 40 7.78	9.101	4 19 20.7	57.98	4 8.60	0.755	0 35 59.18
Frid.	32	0 43 46.26	9.105	N. 4 42 30.0	+57.78	3 50.53	0.751	0 39 55.73

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

+ prefixed to the hourly change of declination indicates that the south declinations are decreasing; the north declinations are increasing.

Diff. for 1 hour,
+ 9^h.8565.
(Table III.)

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0 ^h .
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ'						
1	60	341° 5' 10.9	4 44.6	150.44	+0.47	.9962843	+45.4	1 22 3.92	
2	61	342 5 20.5	4 54.1	150.36	0.46	.9963936	45.6	1 18 8.01	
3	62	343 5 28.2	5 1.7	150.28	0.43	.9965034	45.8	1 14 12.10	
4	63	344 5 33.9	5 7.3	150.19	0.35	.9966136	46.0	1 10 16.19	
5	64	345 5 37.5	5 10.8	150.10	0.27	.9967243	46.2	1 6 20.28	
6	65	346 5 38.9	5 12.1	150.01	0.15	.9968357	46.5	1 2 24.37	
7	66	347 5 38.2	5 11.3	149.92	+0.02	.9969477	46.8	0 58 28.47	
8	67	348 5 35.3	5 8.3	149.83	−0.11	.9970605	47.1	0 54 32.56	
9	68	349 5 30.2	5 3.1	149.74	0.25	.9971741	47.5	0 50 36.66	
10	69	350 5 22.9	4 55.7	149.65	0.38	.9972888	47.9	0 46 40.75	
11	70	351 5 13.4	4 46.1	149.56	0.50	.9974046	48.4	0 42 44.84	
12	71	352 5 1.7	4 34.3	149.47	0.60	.9975214	48.9	0 38 48.93	
13	72	353 4 47.9	4 20.4	149.38	0.66	.9976394	49.4	0 34 53.03	
14	73	354 4 32.1	4 4.5	149.30	0.71	.9977587	49.9	0 30 57.12	
15	74	355 4 14.2	3 46.5	149.21	0.73	.9978792	50.4	0 27 1.21	
16	75	356 3 54.2	3 26.4	149.13	0.70	.9980008	50.9	0 23 5.31	
17	76	357 3 32.3	3 4.4	149.05	0.66	.9981234	51.3	0 19 9.41	
18	77	358 3 8.5	2 40.5	148.97	0.58	.9982471	51.7	0 15 13.50	
19	78	359 2 42.9	2 14.8	148.89	0.49	.9983717	52.1	0 11 17.59	
20	79	0 2 15.4	1 47.2	148.82	0.37	.9984971	52.4	0 7 21.68	
21	80	1 1 46.2	0 18.0	148.75	0.25	.9986232	52.7	{ 0 3 25.78 23 59 29.87 }	
22	81	2 1 15.3	0 47.0	148.68	−0.13	.9987498	52.9	23 55 33.96	
23	82	3 0 42.6	0 14.2	148.60	0.00	.9988769	53.0	23 51 38.05	
24	83	3 60 8.2	59 39.7	148.53	+0.13	.9990042	53.0	23 47 42.15	
25	84	4 59 32.0	59 3.4	148.45	0.24	.9991314	53.0	23 43 46.24	
26	85	5 58 53.9	58 25.2	148.38	0.31	.9992584	52.9	23 39 50.33	
27	86	6 58 14.0	57 45.2	148.30	0.37	.9993854	52.8	23 35 54.42	
28	87	7 57 32.2	57 3.3	148.22	0.39	.9995116	52.6	23 31 58.53	
29	88	8 56 48.5	56 19.5	148.14	0.39	.9996375	52.4	23 28 2.62	
30	89	9 56 2.8	55 33.8	148.06	0.34	.9997629	52.2	23 24 6.71	
31	90	10 55 15.1	54 46.0	147.97	0.28	.9998878	51.9	23 20 10.80	
32	91	11 54 25.2	53 56.0	147.88	+0.18	0.0000120	+51.7	23 16 14.91	
NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0 ^h 0 ^m 0 ^s .									Diff. for 1 hour, − 9 ^h 8 ^m 29 ^s . (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	THE MOON'S								
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
1	16 11.6	16 5.6	59 19.3	-1.74	58 57.2	-1.92	^h ^m 0 57.3	^m 2.09	^d 1.0
2	15 59.1	15 52.2	58 33.3	2.05	58 8.1	2.13	1 47.2	2.07	2.0
3	15 45.2	15 38.1	57 42.2	2.17	57 16.2	2.15	2 36.9	2.07	3.0
4	15 31.1	15 24.4	56 50.6	2.09	56 25.9	2.01	3 26.8	2.09	4.0
5	15 18.0	15 12.1	56 2.4	1.89	55 40.6	1.73	4 17.2	2.10	5.0
6	15 6.7	15 1.9	55 20.8	1.55	55 3.3	1.36	5 7.8	2.10	6.0
7	14 57.8	14 54.3	54 48.1	1.16	54 35.4	0.95	5 58.3	2.09	7.0
8	14 51.5	14 49.5	54 25.2	0.74	54 17.6	0.52	6 48.0	2.04	8.0
9	14 48.1	14 47.4	54 12.5	-0.31	54 10.0	-0.10	7 36.4	1.99	9.0
10	14 47.4	14 48.0	54 10.0	+0.10	54 12.3	+0.28	8 23.4	1.92	10.0
11	14 49.2	14 51.0	54 16.7	0.46	54 23.3	0.63	9 8.8	1.86	11.0
12	14 53.3	14 56.1	54 31.7	0.77	54 41.8	0.90	9 52.9	1.82	12.0
13	14 59.2	15 2.6	54 53.2	1.00	55 5.8	1.09	10 36.3	1.80	13.0
14	15 6.3	15 10.2	55 19.4	1.17	55 33.8	1.22	11 19.6	1.81	14.0
15	15 14.3	15 18.4	55 48.7	1.26	56 3.9	1.28	12 3.5	1.85	15.0
16	15 22.6	15 26.8	56 19.3	1.28	56 34.7	1.27	12 48.9	1.93	16.0
17	15 30.9	15 35.0	56 49.9	1.25	56 4.8	1.22	13 36.4	2.04	17.0
18	15 38.9	15 42.8	57 19.3	1.19	57 33.4	1.15	14 26.7	2.17	18.0
19	15 46.5	15 50.0	57 47.0	1.11	58 0.1	1.06	15 20.5	2.30	19.0
20	15 53.4	15 56.7	58 12.6	1.01	58 24.5	0.96	16 17.1	2.41	20.0
21	15 59.8	16 2.7	58 35.8	0.91	58 46.5	0.86	17 15.7	2.46	21.0
22	16 5.4	16 7.9	58 56.5	0.80	59 5.7	0.72	18 15.0	2.45	22.0
23	16 10.1	16 12.1	59 13.9	0.64	59 21.1	0.54	19 13.2	2.39	23.0
24	16 13.7	16 14.9	59 27.0	0.43	59 31.5	+0.30	20 9.5	2.29	24.0
25	16 15.7	16 15.9	59 34.3	+0.15	59 35.1	-0.02	21 3.4	2.20	25.0
26	16 15.6	16 14.6	59 33.8	-0.20	59 30.3	0.39	21 55.2	2.12	26.0
27	16 13.0	16 10.7	59 24.4	0.50	59 16.1	0.79	22 45.5	2.08	27.0
28	16 7.8	16 4.3	59 5.4	0.99	58 52.3	1.18	23 35.1	2.06	28.0
29	16 0.1	15 55.4	58 37.1	1.35	58 19.9	1.50	♄		29.0
30	15 50.3	15 44.9	58 1.2	1.62	57 41.2	1.71	0 24.8	2.08	0.6
31	15 39.2	15 33.4	57 20.3	1.76	56 58.9	1.78	1 15.0	2.11	1.6
32	15 27.6	15 21.8	56 37.5	-1.77	56 16.4	-1.72	2 6.0	2.13	2.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 1.					THURSDAY 3.				
0	23 33 2.26	2.1874	N. 2 33 5.4	14.117	0	1 17 12.91	2.1680	N. 12 54 31.5	11.344
1	23 35 13.46	2.1880	2 47 11.6	14.088	1	1 19 23.00	2.1684	13 5 49.7	11.361
2	23 37 24.58	2.1847	3 1 16.0	14.058	2	1 21 33.12	2.1689	13 17 2.9	11.178
3	23 39 35.62	2.1833	3 15 18.6	14.027	3	1 23 43.27	2.1694	13 28 11.1	11.094
4	23 41 46.58	2.1821	3 29 19.2	13.993	4	1 25 53.45	2.1698	13 39 14.2	11.008
5	23 43 57.47	2.1809	3 43 17.7	13.958	5	1 28 3.65	2.1702	13 50 12.1	10.922
6	23 46 8.29	2.1798	3 57 14.1	13.922	6	1 30 13.88	2.1707	14 1 4.8	10.835
7	23 48 19.04	2.1787	4 11 8.3	13.884	7	1 32 24.14	2.1713	14 11 52.3	10.747
8	23 50 29.73	2.1776	4 25 0.2	13.845	8	1 34 34.44	2.1719	14 22 34.5	10.658
9	23 52 40.35	2.1766	4 38 49.7	13.805	9	1 36 44.77	2.1724	14 33 11.3	10.569
10	23 54 50.92	2.1757	4 52 36.8	13.763	10	1 38 55.13	2.1730	14 43 42.8	10.480
11	23 57 1.43	2.1747	5 6 21.3	13.720	11	1 41 5.53	2.1737	14 54 8.9	10.389
12	23 59 11.88	2.1738	5 20 3.2	13.676	12	1 43 15.97	2.1742	15 4 29.5	10.297
13	0 1 22.28	2.1730	5 33 42.4	13.631	13	1 45 26.44	2.1748	15 14 44.6	10.205
14	0 3 32.64	2.1722	5 47 18.9	13.585	14	1 47 36.95	2.1755	15 24 54.1	10.119
15	0 5 42.95	2.1714	6 0 52.6	13.538	15	1 49 47.50	2.1762	15 34 58.1	10.019
16	0 7 53.21	2.1707	6 14 23.5	13.489	16	1 51 58.09	2.1768	15 44 56.4	9.924
17	0 10 3.43	2.1701	6 27 51.3	13.438	17	1 54 8.71	2.1774	15 54 49.0	9.830
18	0 12 13.62	2.1695	6 41 16.0	13.386	18	1 56 19.37	2.1781	16 4 36.0	9.735
19	0 14 23.77	2.1689	6 54 37.6	13.334	19	1 58 30.08	2.1787	16 14 17.2	9.638
20	0 16 33.89	2.1684	7 7 56.1	13.281	20	2 0 40.82	2.1793	16 23 52.6	9.541
21	0 18 43.98	2.1679	7 21 11.3	13.225	21	2 2 51.60	2.1800	16 33 22.1	9.444
22	0 20 54.04	2.1674	7 34 23.1	13.169	22	2 5 2.42	2.1807	16 42 45.8	9.346
23	0 23 4.07	2.1670	N. 7 47 31.6	13.112	23	2 7 13.29	2.1815	N. 16 52 3.6	9.247
WEDNESDAY 2.					FRIDAY 4.				
0	0 25 14.08	2.1667	N. 8 0 36.6	13.053	0	2 9 24.20	2.1822	N. 17 1 15.4	9.147
1	0 27 24.07	2.1663	8 13 38.0	12.994	1	2 11 35.15	2.1828	17 10 21.2	9.048
2	0 29 34.04	2.1660	8 26 35.9	12.934	2	2 13 46.14	2.1835	17 19 21.1	8.948
3	0 31 43.99	2.1657	8 39 30.1	12.872	3	2 15 57.17	2.1842	17 28 15.0	8.847
4	0 33 53.93	2.1655	8 52 20.5	12.809	4	2 18 8.25	2.1850	17 37 2.8	8.745
5	0 36 3.86	2.1654	9 5 7.2	12.746	5	2 20 19.37	2.1857	17 45 44.4	8.643
6	0 38 13.78	2.1653	9 17 50.0	12.682	6	2 22 30.53	2.1863	17 54 19.9	8.541
7	0 40 23.69	2.1652	9 30 28.9	12.615	7	2 24 41.73	2.1870	18 2 49.3	8.437
8	0 42 33.60	2.1651	9 43 3.8	12.548	8	2 26 52.97	2.1877	18 11 12.4	8.333
9	0 44 43.50	2.1650	9 55 34.6	12.480	9	2 29 4.25	2.1883	18 19 29.3	8.229
10	0 46 53.40	2.1650	10 8 1.4	12.412	10	2 31 15.57	2.1890	18 27 39.9	8.125
11	0 49 3.30	2.1651	10 20 24.0	12.341	11	2 33 26.93	2.1898	18 35 44.3	8.021
12	0 51 13.21	2.1652	10 32 42.3	12.269	12	2 35 38.34	2.1905	18 43 42.4	7.915
13	0 53 23.12	2.1653	10 44 56.3	12.197	13	2 37 49.79	2.1911	18 51 34.1	7.809
14	0 55 33.04	2.1653	10 57 6.0	12.125	14	2 40 1.27	2.1917	18 59 19.4	7.703
15	0 57 42.96	2.1654	11 9 11.3	12.051	15	2 42 12.79	2.1923	19 6 58.4	7.596
16	0 59 52.89	2.1656	11 21 12.1	11.976	16	2 44 24.35	2.1929	19 14 30.9	7.488
17	1 2 2.83	2.1658	11 33 8.4	11.901	17	2 46 35.94	2.1935	19 21 57.0	7.381
18	1 4 12.79	2.1661	11 45 0.2	11.824	18	2 48 47.57	2.1942	19 29 16.6	7.273
19	1 6 22.76	2.1663	11 56 47.3	11.746	19	2 50 59.24	2.1947	19 36 29.7	7.164
20	1 8 32.75	2.1667	12 8 29.7	11.667	20	2 53 10.94	2.1953	19 43 36.3	7.053
21	1 10 42.76	2.1670	12 20 7.4	11.588	21	2 55 22.68	2.1959	19 50 36.3	6.945
22	1 12 52.79	2.1673	12 31 40.3	11.508	22	2 57 34.45	2.1964	19 57 29.7	6.836
23	1 15 2.84	2.1677	12 43 8.4	11.427	23	2 59 46.25	2.1969	20 4 16.6	6.727
24	1 17 12.91	2.1680	N. 12 54 31.5	11.344	24	3 1 58.08	2.1974	N. 20 10 56.9	6.616

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 5.					MONDAY 7.				
0	3 1 58.08	2.1974	N.20° 10' 56.9"	6.616	0	4 47 33.15	2.1900	N.23° 17' 29.2"	1.121
1	3 4 9.94	2.1979	20 17 30.5	6.505	1	4 49 44.52	2.1899	23 18 33.0	1.007
2	3 6 21.83	2.1984	20 23 57.5	6.395	2	4 51 55.82	2.1878	23 19 30.0	0.892
3	3 8 33.75	2.1989	20 30 17.9	6.284	3	4 54 7.06	2.1888	23 20 20.1	0.777
4	3 10 45.70	2.1993	20 36 31.6	6.173	4	4 56 18.24	2.1858	23 21 3.3	0.663
5	3 12 57.67	2.1997	20 42 38.6	6.060	5	4 58 29.35	2.1847	23 21 39.7	0.549
6	3 15 9.66	2.2000	20 48 38.8	5.948	6	5 0 40.40	2.1835	23 22 9.2	0.435
7	3 17 21.67	2.2004	20 54 32.3	5.836	7	5 2 51.37	2.1893	23 22 31.9	0.321
8	3 19 33.71	2.2008	21 0 19.1	5.723	8	5 5 2.27	2.1811	23 22 47.8	0.207
9	3 21 45.77	2.2019	21 5 59.1	5.609	9	5 7 13.10	2.1798	23 22 56.8	+0.093
10	3 23 57.85	2.2014	21 11 32.3	5.497	10	5 9 23.85	2.1785	23 22 59.0	-0 019
11	3 26 9.94	2.2017	21 16 58.7	5.384	11	5 11 34.52	2.1779	23 22 54.5	0.132
12	3 28 22.05	2.2019	21 22 18.4	5.271	12	5 13 45.11	2.1758	23 22 43.2	0.245
13	3 30 34.17	2.2021	21 27 31.2	5.157	13	5 15 55.62	2.1744	23 22 25.1	0.357
14	3 32 46.30	2.2023	21 32 37.2	5.043	14	5 18 6.04	2.1739	23 22 0.3	0.470
15	3 34 58.45	2.2026	21 37 36.4	4.930	15	5 20 16.37	2.1714	23 21 23.7	0.582
16	3 37 10.61	2.2027	21 42 28.8	4.815	16	5 22 26.61	2.1699	23 20 50.4	0.694
17	3 39 22.77	2.2028	21 47 14.2	4.699	17	5 24 36.76	2.1684	23 20 5.4	0.805
18	3 41 34.94	2.2028	21 51 52.7	4.584	18	5 26 46.82	2.1668	23 19 13.8	0.916
19	3 43 47.11	2.2029	21 56 24.3	4.470	19	5 28 56.78	2.1653	23 18 15.5	1.027
20	3 45 59.29	2.2030	22 0 49.1	4.356	20	5 31 6.65	2.1637	23 17 10.5	1.138
21	3 48 11.47	2.2029	22 5 7.0	4.241	21	5 33 16.42	2.1620	23 15 53.9	1.249
22	3 50 23.64	2.2028	22 9 18.0	4.126	22	5 35 26.09	2.1608	23 14 40.6	1.360
23	3 52 35.81	2.2028	N.22 13 23.1	4.010	22	5 37 35.65	2.1585	N.23 13 15.7	1.469
SUNDAY 6.					TUESDAY 8.				
0	3 54 47.98	2.2027	N.22 17 19.2	3.894	0	5 39 45.11	2.1567	N.23 11 44.3	1.578
1	3 57 0.14	2.2026	22 21 9.4	3.779	1	5 41 54.46	2.1549	23 10 6.3	1.688
2	3 59 12.29	2.2024	22 24 52.7	3.663	2	5 44 3.70	2.1532	23 8 21.7	1.797
3	4 1 24.43	2.2022	22 28 29.0	3.547	3	5 46 12.84	2.1514	23 6 30.6	1.906
4	4 3 36.56	2.2020	22 31 58.4	3.432	4	5 48 21.87	2.1495	23 4 33.0	2.014
5	4 5 48.67	2.2017	22 35 20.9	3.317	5	5 50 30.78	2.1475	23 2 28.9	2.122
6	4 8 0.76	2.2014	22 38 36.5	3.202	6	5 52 39.57	2.1455	23 0 18.4	2.239
7	4 10 12.84	2.2011	22 41 45.1	3.086	7	5 54 48.24	2.1436	22 58 1.4	2.347
8	4 12 24.89	2.2007	22 44 46.8	2.970	8	5 56 56.80	2.1417	22 55 39.0	2.444
9	4 14 36.92	2.2003	22 47 41.5	2.853	9	5 59 5.24	2.1397	22 53 8.1	2.551
10	4 16 48.93	2.1999	22 50 29.2	2.737	10	6 1 13.56	2.1376	22 50 31.8	2.657
11	4 19 0.91	2.1994	22 53 10.0	2.622	11	6 3 21.75	2.1355	22 47 49.2	2.762
12	4 21 12.86	2.1989	22 55 43.9	2.507	12	6 5 29.82	2.1334	22 45 0.3	2.868
13	4 23 24.78	2.1983	22 58 10.8	2.391	13	6 7 37.76	2.1313	22 42 5.0	2.974
14	4 25 36.66	2.1978	23 0 30.8	2.275	14	6 9 45.58	2.1292	22 39 2.4	3.078
15	4 27 48.51	2.1972	23 2 43.8	2.159	15	6 11 53.27	2.1271	22 35 55.6	3.183
16	4 30 0.32	2.1965	23 4 49.9	2.043	16	6 14 0.83	2.1249	22 32 41.5	3.287
17	4 32 12.09	2.1957	23 6 49.0	1.927	17	6 16 8.26	2.1227	22 29 21.2	3.390
18	4 34 23.81	2.1950	23 8 41.2	1.812	18	6 18 15.55	2.1204	22 25 54.7	3.493
19	4 36 35.49	2.1942	23 10 26.5	1.697	19	6 20 22.71	2.1182	22 22 22.0	3.596
20	4 38 47.12	2.1935	23 12 4.0	1.582	20	6 22 29.74	2.1160	22 18 43.2	3.698
21	4 40 58.71	2.1927	23 13 36.4	1.467	21	6 24 36.63	2.1137	22 14 58.2	3.801
22	4 43 10.24	2.1918	23 15 0.9	1.351	22	6 26 43.38	2.1114	22 11 7.1	3.902
23	4 45 21.72	2.1909	23 16 18.5	1.236	23	6 28 50.00	2.1092	22 7 10.0	4.003
24	4 47 33.15	2.1900	N.23 17 29.2	1.121	24	6 30 56.48	2.1068	N.22 3 6.8	4.104

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 9.					FRIDAY 11.				
0	6 30 56.48	2.1089	N.22° 3' 6.8"	4.104	0	8 9 16.48	1.9914	N.16° 59' 27.7"	8.347
1	6 33 2.82	2.1045	21 58 57.5	4.904	1	8 11 15.90	1.9892	16 51 4.6	8.422
2	6 35 9.02	2.1022	21 54 42.3	4.303	2	8 13 15.18	1.9869	16 42 37.0	8.497
3	6 37 15.08	2.0998	21 50 21.1	4.409	3	8 15 14.33	1.9848	16 34 5.0	8.571
4	6 39 21.00	2.0974	21 45 54.0	4.501	4	8 17 13.35	1.9827	16 25 28.5	8.644
5	6 41 26.77	2.0950	21 41 21.0	4.600	5	8 19 12.25	1.9806	16 16 47.7	8.717
6	6 43 32.40	2.0926	21 36 42.0	4.698	6	8 21 11.02	1.9784	16 8 2.5	8.789
7	6 45 37.88	2.0902	21 31 57.2	4.795	7	8 23 9.66	1.9763	15 59 13.0	8.861
8	6 47 43.22	2.0878	21 27 6.6	4.892	8	8 25 8.18	1.9743	15 50 19.2	8.932
9	6 49 48.42	2.0854	21 22 10.2	4.988	9	8 27 6.58	1.9723	15 41 21.2	9.003
10	6 51 53.47	2.0829	21 17 8.0	5.084	10	8 29 4.86	1.9703	15 32 19.0	9.071
11	6 53 58.37	2.0805	21 12 0.1	5.180	11	8 31 3.02	1.9683	15 23 12.7	9.140
12	6 56 3.13	2.0781	21 6 46.4	5.276	12	8 33 1.06	1.9664	15 14 2.2	9.209
13	6 58 7.74	2.0756	21 1 27.0	5.370	13	8 34 58.99	1.9645	15 4 47.6	9.276
14	7 0 12.20	2.0731	20 56 2.0	5.463	14	8 36 56.80	1.9625	14 55 29.0	9.343
15	7 2 16.51	2.0707	20 50 31.4	5.557	15	8 38 54.49	1.9606	14 46 6.4	9.410
16	7 4 20.68	2.0682	20 44 55.2	5.650	16	8 40 52.07	1.9588	14 36 39.8	9.477
17	7 6 24.70	2.0657	20 39 13.4	5.742	17	8 42 49.55	1.9571	14 27 9.2	9.542
18	7 8 28.57	2.0632	20 33 26.1	5.834	18	8 44 46.92	1.9553	14 17 34.7	9.607
19	7 10 32.29	2.0607	20 27 33.3	5.926	19	8 46 44.18	1.9535	14 7 56.4	9.671
20	7 12 35.86	2.0582	20 21 35.0	6.017	20	8 48 41.34	1.9517	13 58 14.2	9.735
21	7 14 39.28	2.0557	20 15 31.2	6.108	21	8 50 38.39	1.9500	13 48 28.2	9.797
22	7 16 42.55	2.0533	20 9 22.0	6.198	22	8 52 35.34	1.9484	13 38 38.5	9.859
23	7 18 45.68	2.0509	N.20° 3' 7.4"	6.288	23	8 54 32.20	1.9468	N.13° 28' 45.1"	9.921
THURSDAY 10.					SATURDAY 12.				
0	7 20 48.66	2.0484	N.19° 56' 47.5"	6.377	0	8 56 28.96	1.9459	N.13° 18' 47.9"	9.983
1	7 22 51.49	2.0459	19 50 22.2	6.465	1	8 58 25.62	1.9436	13 8 47.1	10.043
2	7 24 54.17	2.0434	19 43 51.7	6.552	2	9 0 22.19	1.9411	12 58 42.7	10.109
3	7 26 56.70	2.0409	19 37 15.9	6.640	3	9 2 18.67	1.9406	12 48 34.8	10.161
4	7 28 59.08	2.0385	19 30 34.9	6.727	4	9 4 15.06	1.9391	12 38 23.4	10.219
5	7 31 1.32	2.0361	19 23 48.7	6.813	5	9 6 11.36	1.9377	12 28 8.5	10.277
6	7 33 3.41	2.0336	19 16 57.3	6.899	6	9 8 7.58	1.9362	12 17 50.1	10.335
7	7 35 5.35	2.0311	19 10 0.8	6.984	7	9 10 3.71	1.9348	12 7 28.3	10.391
8	7 37 7.14	2.0287	19 2 59.2	7.069	8	9 11 59.76	1.9336	11 57 3.2	10.447
9	7 39 8.79	2.0262	18 55 52.5	7.153	9	9 13 55.74	1.9322	11 46 34.7	10 509
10	7 41 10.29	2.0238	18 48 40.8	7.237	10	9 15 51.64	1.9311	11 36 2.9	10.557
11	7 43 11.65	2.0215	18 41 24.1	7.319	11	9 17 47.47	1.9298	11 25 27.9	10.611
12	7 45 12.87	2.0191	18 34 2.5	7.402	12	9 19 43.22	1.9286	11 14 49.6	10.664
13	7 47 13.94	2.0167	18 26 35.9	7.484	13	9 21 38.90	1.9275	11 4 8.2	10.716
14	7 49 14.87	2.0142	18 19 4.4	7.565	14	9 23 34.52	1.9264	10 53 23.7	10.768
15	7 51 15.65	2.0118	18 11 28.1	7.645	15	9 25 30.07	1.9253	10 42 36.0	10.820
16	7 53 16.29	2.0096	18 3 47.0	7.726	16	9 27 25.56	1.9243	10 31 45.3	10.870
17	7 55 16.80	2.0073	17 56 1.0	7.807	17	9 29 20.99	1.9232	10 20 51.6	10.920
18	7 57 17.17	2.0050	17 48 10.2	7.888	18	9 31 16.35	1.9222	10 9 54.9	10.969
19	7 59 17.40	2.0027	17 40 14.7	7.964	19	9 33 11.66	1.9214	9 58 55.3	11.017
20	8 1 17.49	2.0003	17 32 14.6	8.041	20	9 35 6.92	1.9206	9 47 52.8	11.065
21	8 3 17.44	1.9980	17 24 9.8	8.119	21	9 37 2.13	1.9198	9 36 47.5	11.119
22	8 5 17.25	1.9958	17 16 0.3	8.196	22	9 38 57.29	1.9190	9 25 39.4	11.159
23	8 7 16.93	1.9936	17 7 46.3	8.272	23	9 40 52.41	1.9183	9 14 28.5	11.205
24	8 9 16.48	1.9914	N.16° 59' 27.7"	8.347	24	9 42 47.48	1.9175	N. 9° 3' 14.8"	11.250

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 13.					TUESDAY 15.				
0	9 42 47.48	1.9175	N. 9 3 14.8	11.950	0	11 14 53.43	1.9387	S. 0 34 33.3	12.522
1	9 44 42.51	1.9168	8 51 58.5	11.994	1	11 16 49.80	1.9403	0 47 4.8	12.538
2	9 46 37.50	1.9163	8 40 39.5	11.338	2	11 18 46.27	1.9400	0 59 36.7	12.533
3	9 48 32.46	1.9157	8 29 17.9	11.381	3	11 20 42.84	1.9438	1 12 8.8	12.538
4	9 50 27.38	1.9151	8 17 53.8	11.493	4	11 22 39.52	1.9456	1 24 41.2	12.549
5	9 52 22.27	1.9147	8 6 27.2	11.464	5	11 24 36.31	1.9475	1 37 13.8	12.544
6	9 54 17.14	1.9142	7 54 58.1	11.505	6	11 26 33.22	1.9485	1 49 46.5	12.546
7	9 56 11.98	1.9138	7 43 26.6	11.545	7	11 28 30.25	1.9514	2 2 19.3	12.547
8	9 58 6.80	1.9134	7 31 52.7	11.585	8	11 30 27.39	1.9533	2 14 52.1	12.546
9	10 0 1.59	1.9131	7 20 16.4	11.623	9	11 32 24.65	1.9554	2 27 24.8	12.545
10	10 1 56.37	1.9129	7 8 37.9	11.661	10	11 34 22.04	1.9577	2 39 57.5	12.543
11	10 3 51.14	1.9127	6 56 57.1	11.698	11	11 36 19.57	1.9599	2 52 30.0	12.540
12	10 5 45.89	1.9124	6 45 14.1	11.735	12	11 38 17.23	1.9621	3 5 2.3	12.537
13	10 7 40.63	1.9122	6 33 28.9	11.771	13	11 40 15.02	1.9643	3 17 34.4	12.532
14	10 9 35.37	1.9120	6 21 41.6	11.805	14	11 42 12.95	1.9667	3 30 6.1	12.525
15	10 11 30.10	1.9119	6 9 52.3	11.839	15	11 44 11.03	1.9692	3 42 37.4	12.518
16	10 13 24.83	1.9119	5 58 0.9	11.873	16	11 46 9.25	1.9716	3 55 8.3	12.511
17	10 15 19.57	1.9123	5 46 7.5	11.906	17	11 48 7.62	1.9741	4 7 38.7	12.509
18	10 17 14.31	1.9124	5 34 12.2	11.938	18	11 50 6.14	1.9767	4 20 8.5	12.492
19	10 19 9.06	1.9126	5 22 15.0	11.969	19	11 52 4.82	1.9793	4 32 37.7	12.481
20	10 21 3.82	1.9128	5 10 15.9	12.000	20	11 54 3.66	1.9819	4 45 6.2	12.469
21	10 22 58.59	1.9130	4 58 15.0	12.029	21	11 56 2.65	1.9846	4 57 34.0	12.457
22	10 24 53.28	1.9133	4 46 12.4	12.058	22	11 58 1.81	1.9874	5 10 1.0	12.443
23	10 26 48.19	1.9137	N. 4 34 8.1	12.086	23	12 0 1.14	1.9902	S. 5 22 27.2	12.428
MONDAY 14.					WEDNESDAY 16.				
0	10 28 43.02	1.9141	N. 4 22 2.1	12.113	0	12 2 0.64	1.9931	S. 5 34 52.4	12.412
1	10 30 37.88	1.9146	4 9 54.5	12.139	1	12 4 0.31	1.9960	5 47 16.6	12.395
2	10 32 32.77	1.9150	3 57 45.4	12.165	2	12 6 0.16	1.9990	5 59 39.8	12.377
3	10 34 27.68	1.9155	3 45 34.7	12.191	3	12 8 0.19	2.0020	6 12 1.9	12.358
4	10 36 22.63	1.9161	3 33 22.5	12.215	4	12 10 0.40	2.0051	6 24 22.8	12.338
5	10 38 17.62	1.9167	3 21 8.9	12.238	5	12 12 0.80	2.0082	6 36 42.5	12.316
6	10 40 12.64	1.9174	3 8 54.0	12.260	6	12 14 1.38	2.0114	6 49 0.8	12.294
7	10 42 7.71	1.9182	2 56 37.7	12.282	7	12 16 2.16	2.0146	7 1 17.8	12.272
8	10 44 2.83	1.9190	2 44 20.2	12.303	8	12 18 3.13	2.0178	7 13 33.4	12.248
9	10 45 57.99	1.9198	2 32 1.4	12.323	9	12 20 4.30	2.0212	7 25 47.5	12.222
10	10 47 53.21	1.9207	2 19 41.4	12.342	10	12 22 5.67	2.0246	7 38 0.0	12.195
11	10 49 48.48	1.9217	2 7 20.3	12.360	11	12 24 7.25	2.0280	7 50 10.9	12.168
12	10 51 43.81	1.9227	1 54 58.2	12.378	12	12 26 9.03	2.0314	8 2 20.2	12.140
13	10 53 39.20	1.9237	1 42 35.0	12.395	13	12 28 11.02	2.0349	8 14 27.7	12.110
14	10 55 34.66	1.9248	1 30 10.8	12.411	14	12 30 13.22	2.0385	8 26 33.4	12.079
15	10 57 30.18	1.9259	1 17 45.7	12.426	15	12 32 15.64	2.0422	8 38 37.2	12.047
16	10 59 25.77	1.9273	1 5 19.7	12.440	16	12 34 18.28	2.0458	8 50 39.0	12.014
17	11 1 21.44	1.9284	0 52 52.9	12.453	17	12 36 21.14	2.0495	9 2 38.9	11.981
18	11 3 17.18	1.9297	0 40 25.4	12.465	18	12 38 24.22	2.0533	9 14 36.7	11.945
19	11 5 13.00	1.9311	0 27 57.1	12.477	19	12 40 27.53	2.0571	9 26 32.3	11.909
20	11 7 8.91	1.9325	0 15 28.1	12.488	20	12 42 31.07	2.0609	9 38 25.7	11.872
21	11 9 4.90	1.9339	N. 0 2 58.5	12.497	21	12 44 34.84	2.0648	9 50 16.9	11.833
22	11 11 0.98	1.9355	S. 0 9 31.6	12.506	22	12 46 38.84	2.0687	10 2 5.7	11.793
23	11 12 57.16	1.9371	0 22 2.2	12.514	23	12 48 43.08	2.0727	10 13 52.1	11.751
24	11 14 53.43	1.9387	S. 0 34 33.3	12.522	24	12 50 47.56	2.0767	S. 10 25 35.9	11.709

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 17.					SATURDAY 19.				
0	12 50 47.56	2.0767	S. 10° 25' 35.9"	11.709	0	14 35 44.95	2.3048	S. 18° 36' 35.7"	8.379
1	12 52 52.29	2.0808	10 37 17.2	11.667	1	14 38 3.39	2.3090	18 44 49.4	8.177
2	12 54 57.26	2.0848	10 48 55.9	11.623	2	14 40 22.14	2.3150	18 52 57.0	8.075
3	12 57 2.47	2.0889	11 0 31.9	11.578	3	14 42 41.19	2.3200	19 0 58.4	7.972
4	12 59 7.93	2.0930	11 12 5.2	11.531	4	14 45 0.54	2.3250	19 8 53.6	7.867
5	13 1 13.65	2.0974	11 23 35.6	11.489	5	14 47 20.19	2.3299	19 16 42.4	7.760
6	13 3 19.62	2.1017	11 35 3.1	11.433	6	14 49 40.13	2.3348	19 24 24.8	7.652
7	13 5 25.85	2.1060	11 46 27.6	11.383	7	14 52 0.37	2.3398	19 32 0.7	7.544
8	13 7 32.34	2.1103	11 57 49.1	11.339	8	14 54 20.91	2.3447	19 39 30.1	7.435
9	13 9 39.09	2.1147	12 9 7.5	11.279	9	14 56 41.74	2.3496	19 46 52.9	7.324
10	13 11 46.11	2.1190	12 20 22.6	11.225	10	14 59 2.86	2.3545	19 54 9.0	7.212
11	13 13 53.39	2.1236	12 31 34.5	11.171	11	15 1 24.28	2.3594	20 1 18.3	7.098
12	13 16 0.94	2.1281	12 42 43.1	11.115	12	15 3 45.99	2.3642	20 8 20.8	6.984
13	13 18 8.76	2.1326	12 53 48.3	11.057	13	15 6 7.99	2.3690	20 15 16.4	6.868
14	13 20 16.85	2.1373	13 4 50.0	10.998	14	15 8 30.27	2.3737	20 22 5.0	6.752
15	13 22 25.22	2.1418	13 15 48.1	10.938	15	15 10 52.83	2.3784	20 28 46.7	6.636
16	13 24 33.87	2.1464	13 26 42.6	10.878	16	15 13 15.68	2.3831	20 35 21.3	6.517
17	13 26 42.79	2.1510	13 37 33.5	10.817	17	15 15 38.81	2.3877	20 41 48.7	6.397
18	13 28 51.99	2.1557	13 48 20.6	10.753	18	15 18 2.21	2.3923	20 48 8.9	6.276
19	13 31 1.48	2.1605	13 59 3.8	10.688	19	15 20 25.89	2.3967	20 54 21.8	6.154
20	13 33 11.25	2.1652	14 9 43.1	10.623	20	15 22 49.84	2.4014	21 0 27.4	6.032
21	13 35 21.30	2.1699	14 20 18.5	10.556	21	15 25 14.06	2.4059	21 6 25.6	5.908
22	13 37 31.64	2.1747	14 30 49.8	10.487	22	15 27 38.55	2.4103	21 12 16.3	5.783
23	13 39 42.27	2.1796	S. 14° 41' 17.0"	10.417	23	15 30 3.30	2.4147	S. 21° 17' 59.5"	5.656
FRIDAY 18.					SUNDAY 20.				
0	13 41 53.19	2.1844	S. 14° 51' 39.9"	10.346	0	15 32 28.31	2.4190	S. 21° 23' 35.0"	5.528
1	13 44 4.40	2.1893	15 1 58.5	10.274	1	15 34 53.58	2.4239	21 29 2.9	5.401
2	13 46 15.90	2.1942	15 12 12.8	10.202	2	15 37 19.10	2.4287	21 34 23.1	5.273
3	13 48 27.70	2.1992	15 22 22.7	10.128	3	15 39 44.88	2.4337	21 39 35.6	5.143
4	13 50 39.80	2.2041	15 32 28.1	10.052	4	15 42 10.90	2.4385	21 44 40.3	5.011
5	13 52 52.19	2.2090	15 42 28.9	9.974	5	15 44 37.17	2.4436	21 49 37.0	4.879
6	13 55 4.88	2.2140	15 52 25.0	9.896	6	15 47 3.68	2.4483	21 54 25.8	4.747
7	13 57 17.87	2.2190	16 2 16.4	9.817	7	15 49 30.43	2.4477	21 59 6.6	4.613
8	13 59 31.16	2.2239	16 12 3.0	9.737	8	15 51 57.41	2.4515	22 3 39.4	4.479
9	14 1 44.74	2.2289	16 21 44.8	9.655	9	15 54 24.61	2.4559	22 8 4.1	4.343
10	14 3 58.63	2.2340	16 31 21.6	9.572	10	15 56 52.03	2.4599	22 12 20.6	4.207
11	14 6 12.82	2.2391	16 40 53.4	9.487	11	15 59 19.68	2.4637	22 16 28.9	4.070
12	14 8 27.32	2.2442	16 50 20.0	9.401	12	16 1 47.55	2.4683	22 20 29.0	3.932
13	14 10 42.12	2.2492	16 59 41.5	9.315	13	16 4 15.63	2.4697	22 24 20.8	3.794
14	14 12 57.22	2.2542	17 8 57.8	9.227	14	16 6 43.91	2.4731	22 28 4.3	3.654
15	14 15 12.62	2.2592	17 18 8.7	9.137	15	16 9 12.40	2.4765	22 31 39.3	3.513
16	14 17 28.33	2.2643	17 27 14.2	9.047	16	16 11 41.09	2.4797	22 35 5.9	3.373
17	14 19 44.34	2.2694	17 36 14.3	8.956	17	16 14 9.97	2.4829	22 38 24.0	3.232
18	14 22 0.66	2.2745	17 45 8.9	8.863	18	16 16 39.04	2.4860	22 41 33.7	3.090
19	14 24 17.28	2.2796	17 53 57.9	8.768	19	16 19 8.29	2.4891	22 44 34.8	2.947
20	14 26 34.21	2.2847	18 2 41.1	8.673	20	16 21 37.73	2.4921	22 47 27.3	2.803
21	14 28 51.44	2.2897	18 11 18.5	8.575	21	16 24 7.34	2.4949	22 50 11.1	2.658
22	14 31 8.97	2.2947	18 19 50.1	8.478	22	16 26 37.12	2.4977	22 52 46.3	2.513
23	14 33 26.81	2.2998	18 28 15.9	8.380	23	16 29 7.06	2.5003	22 55 12.7	2.368
24	14 35 44.05	2.3048	S. 18° 36' 35.7"	8.279	24	16 31 37.16	2.5029	S. 22° 57' 30.4"	2.222

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 21.					WEDNESDAY 23.				
0	^h 16 ^m 31 ^s 37.16	2.5099	S. 22° 57' 30.4"	2.292	0	^h 18 ^m 32 ^s 55.61	2.5143	S. 21° 50' 36.1"	4.996
1	16 34 7.41	2.5054	22 59 39.3	2.075	1	18 35 26.41	2.5122	21 45 32.0	5.140
2	16 36 37.81	2.5079	23 1 39.4	1.997	2	18 37 57.08	2.5101	21 40 19.3	5.384
3	16 39 8.36	2.5103	23 3 30.6	1.780	3	18 40 27.62	2.5079	21 34 57.9	5.427
4	16 41 39.04	2.5194	23 5 13.0	1.632	4	18 42 58.03	2.5057	21 29 28.0	5.569
5	16 44 9.85	2.5146	23 6 46.5	1.483	5	18 45 28.31	2.5035	21 23 49.6	5.711
6	16 46 40.79	2.5167	23 8 11.0	1.333	6	18 47 58.45	2.5011	21 18 2.7	5.852
7	16 49 11.85	2.5186	23 9 26.5	1.184	7	18 50 28.44	2.4986	21 12 7.3	5.992
8	16 51 43.02	2.5204	23 10 33.1	1.035	8	18 52 58.28	2.4960	21 6 3.6	6.132
9	16 54 14.30	2.5222	23 11 30.7	0.885	9	18 55 27.96	2.4934	20 59 51.5	6.271
10	16 56 45.68	2.5238	23 12 19.3	0.734	10	18 57 57.49	2.4908	20 53 31.1	6.408
11	16 59 17.16	2.5254	23 12 58.8	0.582	11	19 0 26.86	2.4881	20 47 2.5	6.545
12	17 1 48.73	2.5268	23 13 29.2	0.431	12	19 2 56.06	2.4853	20 40 25.7	6.682
13	17 4 20.38	2.5282	23 13 50.5	0.279	13	19 5 25.09	2.4824	20 33 40.7	6.817
14	17 6 52.12	2.5296	23 14 2.7	-0.128	14	19 7 53.95	2.4795	20 26 47.6	6.951
15	17 9 23.93	2.5307	23 14 5.9	+0.024	15	19 10 22.63	2.4766	20 19 46.6	7.084
16	17 11 55.80	2.5317	23 13 59.9	0.176	16	19 12 51.14	2.4736	20 12 37.6	7.217
17	17 14 27.74	2.5327	23 13 44.8	0.328	17	19 15 19.46	2.4705	20 5 20.6	7.348
18	17 16 59.73	2.5336	23 13 20.5	0.481	18	19 17 47.60	2.4674	19 57 55.8	7.478
19	17 19 31.77	2.5344	23 12 47.1	0.634	19	19 20 15.55	2.4643	19 50 23.2	7.608
20	17 22 3.86	2.5351	23 12 4.5	0.787	20	19 22 43.31	2.4611	19 42 42.8	7.737
21	17 24 35.98	2.5356	23 11 12.7	0.939	21	19 25 10.88	2.4578	19 34 54.7	7.865
22	17 27 8.13	2.5361	23 10 11.8	1.092	22	19 27 38.25	2.4545	19 26 59.0	7.992
23	17 29 40.31	2.5364	S. 23° 9' 1.7	1.244	23	19 30 5.42	2.4512	S. 19° 18' 55.7	8.117
TUESDAY 22.					THURSDAY 24.				
0	17 32 12.50	2.5367	S. 23° 7' 42.5	1.397	0	19 32 32.39	2.4478	S. 19° 10' 45.0	8.240
1	17 34 44.71	2.5369	23 6 14.1	1.550	1	19 34 59.16	2.4444	19 2 26.9	8.363
2	17 37 16.93	2.5369	23 4 36.5	1.702	2	19 37 25.72	2.4410	18 54 1.4	8.486
3	17 39 49.14	2.5368	23 2 49.8	1.855	3	19 39 52.08	2.4376	18 45 28.5	8.608
4	17 42 21.35	2.5367	23 0 53.9	2.008	4	19 42 18.23	2.4341	18 36 48.4	8.728
5	17 44 53.55	2.5365	22 58 48.8	2.161	5	19 44 44.17	2.4305	18 28 1.2	8.847
6	17 47 25.73	2.5362	22 56 34.6	2.313	6	19 47 9.89	2.4269	18 19 6.8	8.965
7	17 49 57.89	2.5357	22 54 11.3	2.464	7	19 49 35.40	2.4234	18 10 5.4	9.081
8	17 52 30.02	2.5352	22 51 38.9	2.616	8	19 52 0.70	2.4198	18 0 57.1	9.196
9	17 55 2.11	2.5345	22 48 57.3	2.768	9	19 54 25.78	2.4162	17 51 41.9	9.311
10	17 57 34.16	2.5338	22 46 6.7	2.919	10	19 56 50.64	2.4125	17 42 19.8	9.424
11	18 0 6.17	2.5331	22 43 7.0	3.070	11	19 59 15.28	2.4089	17 32 51.0	9.535
12	18 2 38.13	2.5322	22 39 58.3	3.221	12	20 1 39.71	2.4053	17 23 15.6	9.645
13	18 5 10.03	2.5313	22 36 40.5	3.373	13	20 4 3.92	2.4016	17 13 33.6	9.755
14	18 7 41.87	2.5301	22 33 13.7	3.524	14	20 6 27.90	2.3978	17 3 45.0	9.863
15	18 10 13.64	2.5289	22 29 38.0	3.676	15	20 8 51.65	2.3940	16 53 50.0	9.970
16	18 12 45.34	2.5276	22 25 53.3	3.828	16	20 11 15.18	2.3903	16 43 48.6	10.076
17	18 15 16.95	2.5262	22 21 59.6	3.969	17	20 13 38.49	2.3866	16 33 40.9	10.180
18	18 17 48.48	2.5247	22 17 57.0	4.117	18	20 16 1.58	2.3829	16 23 27.0	10.282
19	18 20 19.92	2.5232	22 13 45.5	4.265	19	20 18 24.44	2.3792	16 13 7.0	10.384
20	18 22 51.27	2.5217	22 9 25.2	4.412	20	20 20 47.08	2.3755	16 2 40.9	10.485
21	18 25 22.52	2.5199	22 4 56.1	4.558	21	20 23 9.50	2.3717	15 52 8.8	10.584
22	18 27 53.66	2.5181	22 0 18.2	4.705	22	20 25 31.69	2.3679	15 41 30.8	10.682
23	18 30 24.69	2.5162	21 55 31.5	4.851	23	20 27 53.65	2.3642	15 30 47.0	10.778
24	18 32 55.61	2.5143	S. 21° 50' 36.1	4.996	24	20 30 15.39	2.3605	S. 15° 19' 57.5	10.873

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 25.					SUNDAY 27.				
0	^h 20 ^m 30 ^s 15.39	2.3605	S. 15° 19' 57.5"	10.873	0	^h 22 ^m 19 ^s 38.32	2.3097	S. 5° 15' 18.2"	13.763
1	20 32 36.91	2.3567	15 9 2.3	10.967	1	22 21 50.84	2.3076	5 1 31.6	13.788
2	20 34 58.20	2.3530	14 58 1.5	11.059	2	22 24 3.23	2.3055	4 47 43.6	13.811
3	20 37 19.27	2.3493	14 46 55.2	11.150	3	22 26 15.50	2.3034	4 33 54.3	13.832
4	20 39 40.12	2.3456	14 35 43.5	11.240	4	22 28 27.64	2.3013	4 20 3.7	13.853
5	20 42 0.74	2.3418	14 24 26.4	11.328	5	22 30 39.66	2.1994	4 6 11.9	13.873
6	20 44 21.14	2.3382	14 13 4.1	11.415	6	22 32 51.57	2.1975	3 52 19.1	13.888
7	20 46 41.32	2.3345	14 1 36.6	11.501	7	22 35 3.36	2.1956	3 38 25.3	13.904
8	20 49 1.28	2.3308	13 50 4.0	11.585	8	22 37 15.04	2.1937	3 24 30.6	13.918
9	20 51 21.02	2.3272	13 38 26.4	11.667	9	22 39 26.61	2.1920	3 10 35.1	13.932
10	20 53 40.55	2.3237	13 26 43.9	11.748	10	22 41 38.08	2.1903	2 56 38.8	13.943
11	20 55 59.86	2.3200	13 14 56.6	11.828	11	22 43 49.45	2.1886	2 42 41.9	13.952
12	20 58 18.95	2.3164	13 3 4.5	11.907	12	22 46 0.71	2.1869	2 28 44.5	13.960
13	21 0 37.83	2.3129	12 51 7.7	11.984	13	22 48 11.87	2.1853	2 14 46.7	13.968
14	21 2 56.50	2.3093	12 39 6.4	12.059	14	22 50 22.95	2.1839	2 0 48.4	13.974
15	21 5 14.95	2.3058	12 27 0.6	12.133	15	22 52 33.94	2.1824	1 46 49.8	13.978
16	21 7 33.20	2.3024	12 14 50.4	12.206	16	22 54 44.84	2.1809	1 32 51.0	13.981
17	21 9 51.24	2.2989	12 2 35.9	12.277	17	22 56 55.65	2.1795	1 18 52.1	13.988
18	21 12 9.07	2.2955	11 50 17.1	12.348	18	22 59 6.38	2.1782	1 4 53.2	13.993
19	21 14 26.70	2.2921	11 37 54.1	12.417	19	23 1 17.03	2.1769	0 50 54.3	13.981
20	21 16 44.12	2.2887	11 25 27.1	12.483	20	23 3 27.61	2.1756	0 36 55.5	13.978
21	21 19 1.34	2.2853	11 12 56.2	12.548	21	23 5 38.11	2.1744	0 22 57.0	13.973
22	21 21 18.36	2.2821	11 0 21.4	12.613	22	23 7 48.54	2.1733	S. 0 8 58.8	13.967
23	21 23 35.19	2.2788	S. 10 47 42.7	12.676	23	23 9 58.91	2.1723	N. 0 4 59.0	13.960
SATURDAY 26.					MONDAY 28.				
0	21 25 51.82	2.2755	S. 10 35 0.3	12.737	0	23 12 9.22	2.1713	N. 0 18 56.4	13.952
1	21 28 8.25	2.2723	10 22 14.3	12.796	1	23 14 19.47	2.1703	0 32 53.2	13.942
2	21 30 24.50	2.2692	10 9 24.8	12.854	2	23 16 29.66	2.1693	0 46 49.4	13.931
3	21 32 40.56	2.2661	9 56 31.8	12.912	3	23 18 39.79	2.1684	1 0 44.9	13.918
4	21 34 56.43	2.2630	9 43 35.4	12.967	4	23 20 49.87	2.1676	1 14 39.5	13.903
5	21 37 12.12	2.2599	9 30 35.8	13.020	5	23 22 59.90	2.1668	1 28 33.3	13.888
6	21 39 27.62	2.2568	9 17 33.0	13.073	6	23 25 9.89	2.1661	1 42 26.1	13.873
7	21 41 42.94	2.2539	9 4 27.1	13.123	7	23 27 19.83	2.1654	1 56 17.9	13.853
8	21 43 58.09	2.2510	8 51 18.2	13.172	8	23 29 29.74	2.1648	2 10 8.5	13.833
9	21 46 13.06	2.2481	8 38 6.4	13.221	9	23 31 39.61	2.1642	2 23 57.9	13.812
10	21 48 27.86	2.2452	8 24 51.7	13.268	10	23 33 49.44	2.1636	2 37 46.0	13.790
11	21 50 42.49	2.2423	8 11 34.3	13.313	11	23 35 59.24	2.1631	2 51 32.7	13.767
12	21 52 56.94	2.2395	7 58 14.2	13.357	12	23 38 9.01	2.1627	3 5 18.0	13.742
13	21 55 11.23	2.2368	7 44 51.5	13.398	13	23 40 18.76	2.1622	3 19 1.8	13.716
14	21 57 25.36	2.2342	7 31 26.4	13.438	14	23 42 28.48	2.1618	3 32 43.9	13.687
15	21 59 39.33	2.2315	7 17 58.9	13.477	15	23 44 38.18	2.1615	3 46 24.3	13.658
16	22 1 53.14	2.2289	7 4 29.1	13.515	16	23 46 47.86	2.1613	4 0 2.9	13.628
17	22 4 6.80	2.2264	6 50 57.1	13.552	17	23 48 57.53	2.1611	4 13 39.7	13.597
18	22 6 20.31	2.2239	6 37 22.9	13.587	18	23 51 7.19	2.1609	4 27 14.6	13.564
19	22 8 33.67	2.2214	6 23 46.7	13.620	19	23 53 16.84	2.1607	4 40 47.4	13.530
20	22 10 46.88	2.2190	6 10 8.5	13.652	20	23 55 26.48	2.1606	4 54 18.2	13.495
21	22 12 59.95	2.2167	5 56 28.5	13.682	21	23 57 36.11	2.1605	5 7 46.8	13.458
22	22 15 12.88	2.2143	5 42 46.7	13.711	22	23 59 45.74	2.1605	5 21 13.1	13.420
23	22 17 25.67	2.2120	5 29 3.2	13.738	23	0 1 55.37	2.1605	5 34 37.2	13.382
24	22 19 38.32	2.2097	S. 5 15 18.2	13.763	24	0 4 5.00	2.1606	N. 5 47 58.9	13.341

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.					
TUESDAY 29.					THURSDAY 31.									
0	0 4 5.00	2.1606	N. 5 47 58.9	13.1	0	1 48 29.02	2.1982	N. 15 19 25.7	10.062					
1	0 6 14.64	2.1607	6 1 18.1	13.298	1	1 50 40.95	2.1983	15 29 26.7	9.970					
2	0 8 24.29	2.1609	6 14 34.7	13.255	2	1 52 52.94	2.2004	15 39 22.1	9.878					
3	0 10 33.95	2.1611	6 27 48.7	13.211	3	1 55 5.00	2.2016	15 49 12.0	9.785					
4	0 12 43.62	2.1613	6 41 0.0	13.166	4	1 57 17.13	2.2028	15 58 56.3	9.690					
5	0 14 53.30	2.1615	6 54 8.0	13.119	5	1 59 29.33	2.2040	16 8 34.8	9.594					
6	0 17 3.00	2.1618	7 7 14.3	13.071	6	2 1 41.61	2.2052	16 18 7.5	9.497					
7	0 19 12.72	2.1622	7 20 17.1	13.022	7	2 3 53.96	2.2063	16 27 34.4	9.399					
8	0 21 22.46	2.1625	7 33 16.9	12.971	8	2 6 6.37	2.2074	16 36 55.4	9.302					
9	0 23 32.22	2.1628	7 46 13.6	12.919	9	2 8 18.85	2.2086	16 46 10.6	9.204					
10	0 25 42.00	2.1633	7 59 7.2	12.867	10	2 10 31.40	2.2097	16 55 19.9	9.105					
11	0 27 51.82	2.1639	8 11 57.6	12.813	11	2 12 44.01	2.2108	17 4 23.2	9.006					
12	0 30 1.67	2.1644	8 24 44.7	12.757	12	2 14 56.69	2.2119	17 13 20.6	8.906					
13	0 32 11.55	2.1649	8 37 28.4	12.701	13	2 17 9.44	2.2130	17 22 11.9	8.804					
14	0 34 21.46	2.1654	8 50 8.8	12.644	14	2 19 22.25	2.2141	17 30 57.1	8.702					
15	0 36 31.40	2.1660	9 2 45.7	12.585	15	2 21 35.13	2.2152	17 39 36.1	8.599					
16	0 38 41.38	2.1667	9 15 19.0	12.525	16	2 23 48.07	2.2162	17 48 9.0	8.496					
17	0 40 51.40	2.1674	9 27 48.7	12.465	17	2 26 1.07	2.2173	17 56 35.7	8.392					
18	0 43 1.47	2.1682	9 40 14.8	12.403	18	2 28 14.14	2.2183	18 4 56.1	8.288					
19	0 45 11.58	2.1688	9 52 37.1	12.340	19	2 30 27.27	2.2193	18 13 10.3	8.183					
20	0 47 21.73	2.1695	10 4 55.6	12.275	20	2 32 40.46	2.2203	18 21 18.1	8.078					
21	0 49 31.92	2.1703	10 17 10.1	12.209	21	2 34 53.70	2.2212	18 29 19.6	7.973					
22	0 51 42.16	2.1711	10 29 20.7	12.143	22	2 37 7.01	2.2222	18 37 14.7	7.865					
23	0 53 52.45	2.1720	N. 10 41 27.3	12.076	23	2 39 20.37	2.2232	N. 18 45 3.4	7.757					
WEDNESDAY 30.					FRIDAY, APRIL 1.									
0	0 56 2.80	2.1729	N. 10 53 29.8	12.007	0	2 41 33.79	2.2241	N. 18 52 45.6	7.650					
1	0 58 13.20	2.1737	11 5 28.1	11.937	PHASES OF THE MOON.									
2	1 0 23.65	2.1746	11 17 22.2	11.867										
3	1 2 34.15	2.1755	11 29 12.1	11.785										
4	1 4 44.71	2.1764	11 40 57.6	11.702										
5	1 6 55.32	2.1773	11 52 38.7	11.618	☾ First Quarter, . . .	d 7 h 8 m	2.0							
6	1 9 5.99	2.1783	12 4 15.4	11.573	☉ Full Moon, . . .	15 10 36.9								
7	1 11 16.72	2.1793	12 15 47.5	11.498	☾ Last Quarter, . . .	22 15 30.0								
8	1 13 27.51	2.1804	12 27 15.1	11.421	● New Moon, . . .	29 10 32.4								
9	1 15 38.37	2.1814	12 38 38.0	11.342										
10	1 17 49.28	2.1824	12 49 56.2	11.263										
11	1 20 0.26	2.1835	13 1 9.6	11.183										
12	1 22 11.30	2.1846	13 12 18.2	11.103										
13	1 24 22.41	2.1857	13 23 22.0	11.022										
14	1 26 33.58	2.1867	13 34 20.8	10.939										
15	1 28 44.82	2.1878	13 45 14.6	10.855										
16	1 30 56.12	2.1889	13 56 3.4	10.771										
17	1 33 7.49	2.1901	14 6 47.1	10.685										
18	1 35 18.93	2.1912	14 17 25.6	10.599										
19	1 37 30.44	2.1924	14 27 58.9	10.512										
20	1 39 42.02	2.1935	14 38 27.0	10.424										
21	1 41 53.66	2.1946	14 48 49.8	10.335										
22	1 44 5.37	2.1958	14 59 7.2	10.245										
23	1 46 17.16	2.1971	15 9 19.2	10.154										
24	1 48 29.02	2.1982	N. 15 19 25.7	10.062						☾ Apogee,	d 9 h 17.7			
										☾ Perigee,	25 10.4			

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	Vlh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	14 36 58	2817	16 11 4	2789	17 45 47	2779	19 20 52	2763
	Aldebaran	E.	73 57 2	2296	72 10 57	2311	70 25 14	2336	68 39 52	2341
	Pollux	E.	115 48 16	2328	114 2 58	2240	112 17 57	2353	110 33 14	2366
2	Sun	W.	27 17 3	2789	28 51 54	2793	30 26 31	2805	32 0 53	2818
	Aldebaran	E.	59 58 48	2484	58 15 48	2443	56 33 14	2460	54 51 5	2480
	Pollux	E.	101 54 36	2438	100 11 56	2455	98 29 39	2470	96 47 44	2487
3	Sun	W.	39 48 8	2894	41 20 35	2910	42 52 41	2927	44 24 25	2944
	Aldebaran	E.	46 27 5	2577	44 47 39	2599	43 8 43	2621	41 30 17	2643
	Pollux	E.	88 24 0	2579	86 44 27	2590	85 5 18	2607	83 26 33	2625
4	Sun	W.	51 57 42	3031	53 27 16	3049	54 56 28	3066	56 25 19	3083
	Aldebaran	E.	33 25 48	2784	31 50 33	2791	38 15 53	2820	28 41 51	2850
	Pollux	E.	75 18 52	2715	73 42 32	2733	72 6 36	2751	70 31 4	2769
	Regulus	E.	112 9 6	2676	110 31 54	2692	108 55 4	2709	107 18 36	2725
5	Sun	W.	63 44 23	3167	65 11 12	3183	66 37 41	3199	68 3 51	3214
	Jupiter	W.	27 42 6	2954	29 13 16	2968	30 44 17	2989	32 15 8	2977
	Saturn	W.	23 3 5	3004	24 33 13	2999	26 3 27	2997	27 33 43	2998
	Venus	W.	17 47 34	3109	19 15 33	3194	20 43 14	3138	22 10 37	3153
	Pollux	E.	62 39 12	2857	61 5 58	2875	59 33 7	2892	58 0 38	2909
	Regulus	E.	99 21 37	2805	97 47 15	2890	96 13 13	2834	94 39 29	2848
6	Sun	W.	75 10 16	3287	76 34 43	3300	77 58 55	3313	79 22 52	3325
	Jupiter	W.	39 46 32	3036	41 16 12	3038	42 45 40	3046	44 14 56	3055
	Saturn	W.	35 4 13	3081	36 34 0	3028	38 3 38	3035	39 13 7	3043
	Venus	W.	29 23 19	3221	30 49 3	3223	32 14 33	3246	33 39 48	3258
	α Arietis	W.	26 21 6	3037	27 50 45	3026	29 20 25	3028	30 50 3	3030
	Pollux	E.	50 23 37	2994	48 53 17	3011	47 23 18	3028	45 53 40	3045
	Regulus	E.	86 55 24	2916	85 23 26	2929	83 51 44	2941	82 20 17	2953
7	Sun	W.	86 19 9	3381	87 41 47	3391	89 4 14	3400	90 26 31	3408
	Jupiter	W.	51 38 26	3100	53 6 36	3107	54 34 37	3115	56 2 28	3122
	Saturn	W.	46 58 18	3078	48 26 54	3085	49 55 22	3091	51 23 42	3097
	Venus	W.	40 42 49	3309	42 6 50	3318	43 30 41	3326	44 54 22	3335
	α Arietis	W.	38 17 6	3053	39 46 13	3057	41 15 15	3062	42 44 11	3067
	Pollux	E.	38 30 51	3135	37 3 24	3155	35 36 21	3175	34 9 42	3197
	Regulus	E.	74 46 34	3005	73 16 28	3014	71 46 33	3023	70 16 49	3032
8	Sun	W.	97 15 38	3445	98 37 4	3450	99 58 24	3455	101 19 38	3460
	Jupiter	W.	63 19 46	3152	64 46 53	3156	66 13 55	3161	67 40 51	3164
	Saturn	W.	58 43 39	3194	60 11 20	3128	61 38 56	3131	63 6 28	3134
	Venus	W.	51 50 41	3366	53 13 36	3371	54 36 26	3375	55 59 11	3379
	α Arietis	W.	50 7 26	3088	51 35 50	3091	53 4 10	3095	54 32 26	3097
	Regulus	E.	62 50 34	3066	61 21 43	3073	59 53 0	3078	58 24 24	3082
9	Sun	W.	108 4 40	3477	109 25 30	3478	110 46 19	3479	112 7 7	3480
	Jupiter	W.	74 54 36	3176	76 21 14	3178	77 47 50	3178	79 14 25	3178
	Saturn	W.	70 23 17	3145	71 50 32	3146	73 17 46	3146	74 45 0	3145
	Venus	W.	62 52 0	3391	64 14 27	3391	65 36 54	3392	66 59 20	3392
	α Arietis	W.	61 53 5	3105	63 21 8	3106	64 49 10	3106	66 17 12	3105
	Aldebaran	W.	29 17 25	3197	30 43 38	3188	32 10 1	3180	33 36 34	3173

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXh.	P. L. of Diff.
1	Sun	W.	20° 56' 9"	9760	22° 31' 29"	9769	24° 6' 47"	9766	25° 42' 0"	9773
	Aldebaran	E.	66 54 52	9357	65 10 15	9373	63 26 2	9390	61 42 13	9407
	Pollux	E.	108 48 50	9379	107 4 45	9394	105 21 1	9408	103 37 38	9423
2	Sun	W.	33 34 58	9831	35 8 45	9846	36 42 18	9869	38 15 21	9878
	Aldebaran	E.	53 9 23	9499	51 28 8	9518	49 47 20	9538	48 6 59	9557
	Pollux	E.	95 6 12	9503	93 25 3	9520	91 44 18	9538	90 3 57	9555
3	Sun	W.	45 55 48	9902	47 26 49	9979	48 57 28	9996	50 27 46	3014
	Aldebaran	E.	39 52 21	9666	38 14 55	9689	36 38 0	9713	35 1 37	9738
	Pollux	E.	81 48 12	9643	80 10 16	9661	78 32 44	9679	76 55 36	9697
4	Sun	W.	57 53 49	3101	59 21 58	3117	60 49 47	3134	62 17 15	3151
	Aldebaran	E.	27 8 28	9883	25 35 47	9919	24 3 52	9959	22 32 48	3004
	Pollux	E.	68 55 55	9786	67 21 9	9805	65 46 47	9822	64 12 48	9840
	Regulus	E.	105 42 30	9741	104 6 45	9758	102 31 22	9773	100 56 19	9789
5	Sun	W.	69 29 43	3930	70 55 17	3945	72 20 33	3959	73 45 33	3973
	Jupiter	W.	33 45 49	3987	35 16 18	3997	36 46 35	3996	38 16 40	3917
	Saturn	W.	29 3 58	3001	30 34 10	3005	32 4 17	3009	33 34 18	3014
	Venus	W.	23 37 43	3167	25 4 32	3181	26 31 4	3195	27 57 19	3209
	Pollux	E.	56 28 31	9996	54 56 45	9943	53 25 21	9960	51 54 18	9977
	Regulus	E.	93 6 4	9963	91 32 58	9976	90 0 9	9991	88 27 38	9994
6	Sun	W.	80 46 34	3338	82 10 2	3349	83 33 17	3360	84 56 19	3371
	Jupiter	W.	45 44 1	3065	47 12 54	3074	48 41 35	3089	50 10 6	3091
	Saturn	W.	41 2 27	3050	42 31 38	3057	44 0 40	3065	45 29 33	3071
	Venus	W.	35 4 49	3269	36 29 37	3279	37 54 13	3289	39 18 37	3300
	α Arietis	W.	32 19 38	3034	33 49 9	3039	35 18 34	3043	36 47 53	3048
	Pollux	E.	44 24 23	3069	42 55 27	3080	41 26 53	3098	39 58 41	3116
	Regulus	E.	80 49 5	9964	79 18 7	9975	77 47 23	9985	76 16 52	9996
7	Sun	W.	91 48 38	3417	93 10 35	3494	94 32 24	3431	95 54 5	3438
	Jupiter	W.	57 30 11	3129	58 57 46	3135	60 25 13	3141	61 52 33	3147
	Saturn	W.	52 51 55	3103	54 20 1	3109	55 48 0	3114	57 15 52	3119
	Venus	W.	46 17 53	3342	47 41 16	3348	49 4 32	3355	50 27 40	3361
	α Arietis	W.	44 13 1	3072	45 41 45	3076	47 10 24	3080	48 38 58	3085
	Pollux	E.	32 43 29	3290	31 17 44	3245	29 52 28	3273	28 27 44	3302
	Regulus	E.	68 47 16	3040	67 17 53	3047	65 48 39	3054	64 19 33	3060
8	Sun	W.	102 40 47	3464	104 1 51	3468	105 22 51	3471	106 43 47	3474
	Jupiter	W.	69 7 43	3168	70 34 30	3171	72 1 14	3173	73 27 56	3174
	Saturn	W.	64 33 56	3139	66 1 20	3140	67 28 41	3142	68 56 0	3143
	Venus	W.	57 21 51	3363	58 44 27	3366	60 7 0	3367	61 29 31	3369
	α Arietis	W.	56 0 39	3100	57 28 49	3109	58 56 56	3104	60 25 1	3105
	Regulus	E.	56 55 53	3087	55 27 28	3091	53 59 8	3095	52 30 52	3098
9	Sun	W.	113 27 54	3480	114 48 40	3480	116 9 26	3480	117 30 13	3479
	Jupiter	W.	80 41 0	3178	82 7 35	3178	83 34 11	3177	85 0 48	3175
	Saturn	W.	76 12 15	3145	77 30 30	3145	79 6 45	3144	80 34 1	3142
	Venus	W.	68 21 46	3391	69 44 13	3389	71 6 42	3387	72 29 13	3386
	α Arietis	W.	67 45 15	3105	69 13 18	3104	70 41 23	3103	72 9 29	3101
	Aldebaran	W.	35 3 16	3166	36 30 6	3159	37 57 4	3153	39 24 10	3147

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	Regulus E.	51° 2' 40"	3101	49° 34' 32"	3104	48° 6' 27"	3106	46° 38' 25"	3108
	Spica E.	104 58 3	3077	103 29 25	3078	102 0 48	3079	100 32 13	3079
10	Sun W.	118 51 1	3477	120 11 51	3475	121 32 43	3473	122 53 37	3471
	Jupiter W.	86 27 27	3173	87 54 8	3171	89 20 52	3168	90 47 39	3166
	Saturn W.	82 1 20	3140	83 28 41	3138	84 56 5	3135	86 23 32	3132
	Venus W.	73 51 46	3383	75 14 22	3380	76 37 1	3377	77 59 44	3373
	α Arietis W.	73 37 38	3099	75 5 49	3096	76 34 3	3093	78 2 21	3090
	Aldebaran W.	40 51 23	3141	42 18 43	3134	43 46 11	3129	45 13 46	3123
	Regulus E.	39 18 43	3114	37 50 51	3114	36 22 59	3115	34 55 8	3117
	Spica E.	93 9 13	3075	91 40 33	3073	90 11 49	3069	88 43 2	3067
11	Jupiter W.	98 2 37	3145	99 20 52	3140	100 57 13	3134	102 24 41	3129
	Saturn W.	93 41 53	3111	95 9 49	3106	96 37 51	3101	98 6 0	3096
	α Arietis W.	85 24 58	3069	86 53 46	3064	88 22 40	3058	89 51 41	3052
	Venus W.	84 54 37	3347	86 17 54	3341	87 41 18	3334	89 4 50	3327
	Aldebaran W.	52 33 36	3090	54 1 58	3083	55 30 28	3076	56 59 7	3069
	Spica E.	81 18 6	3047	79 48 51	3041	78 19 20	3036	76 50 1	3030
12	α Arietis W.	97 18 42	3019	98 48 31	3019	100 18 29	3005	101 48 36	2997
	Venus W.	96 4 36	3288	97 29 1	3279	98 53 37	3270	100 18 23	3261
	Aldebaran W.	64 24 42	3030	65 54 18	3021	67 24 5	3013	68 54 2	3004
	Pollux W.	23 36 37	3336	25 0 7	3329	26 24 28	3253	27 49 35	3219
	Spica E.	69 20 44	2997	67 50 27	2989	66 20 1	2981	64 49 25	2974
	Antares E.	114 51 53	3001	113 21 42	2993	111 51 21	2985	110 20 50	2977
13	Aldebaran W.	76 26 34	2958	77 57 39	2949	79 28 56	2939	81 0 25	2930
	Pollux W.	35 4 4	3090	36 32 26	3070	38 1 12	3051	39 30 22	3038
	Spica E.	57 13 55	2939	55 42 17	2924	54 10 28	2914	52 38 27	2905
	Antares E.	102 45 38	2935	101 14 3	2925	99 42 16	2916	98 10 17	2906
14	Aldebaran W.	88 40 53	2881	90 13 36	2871	91 46 32	2861	93 19 41	2852
	Pollux W.	47 1 34	2951	48 32 48	2937	50 4 20	2924	51 36 9	2910
	Spica E.	44 55 25	2859	43 22 13	2849	41 48 49	2840	40 15 13	2830
	Antares E.	90 27 21	2859	88 54 9	2848	87 20 44	2838	85 47 6	2828
15	Aldebaran W.	101 8 34	2809	102 42 59	2793	104 17 36	2783	105 52 26	2774
	Pollux W.	59 19 32	2845	60 53 2	2839	62 26 48	2821	64 0 49	2809
	Regulus W.	22 19 23	2989	23 52 5	2959	25 25 16	2938	26 58 54	2890
	Spica E.	32 24 8	2785	30 49 20	2775	29 14 20	2767	27 39 9	2759
	Antares E.	77 55 44	2779	76 20 49	2769	74 45 40	2760	73 10 19	2750
16	Pollux W.	71 54 38	2753	73 30 7	2743	75 5 50	2732	76 41 47	2722
	Regulus W.	34 52 39	2742	36 28 23	2729	38 4 24	2716	39 40 42	2704
	Antares E.	65 10 21	2702	63 33 44	2692	61 56 54	2684	60 19 52	2674
17	Pollux W.	84 44 50	2675	86 22 4	2665	87 59 31	2656	89 37 10	2648
	Regulus W.	47 46 7	2649	49 23 56	2638	51 1 59	2629	52 40 15	2618
	Antares E.	52 11 40	2631	50 33 27	2623	48 55 2	2614	47 16 26	2607
	α Aquilæ E.	104 45 38	3190	103 17 53	3105	101 49 50	3091	100 21 29	3076
18	Pollux W.	97 48 13	2607	99 26 58	2600	101 5 53	2592	102 44 58	2586
	Regulus W.	60 54 52	2579	62 34 25	2564	64 14 10	2556	65 54 6	2547

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Dif.	XVh.	P. L. of Dif.	XVIIIh.	P. L. of Dif.	XXIh.	P. L. of Dif.
9	Regulus	E.	45° 10' 25"	3110	43° 42' 27"	3111	42° 14' 31"	3119	40° 46' 36"	3114
	Spica	E.	99° 3' 38"	3079	97° 35' 3"	3079	96° 6' 28"	3078	94° 37' 51"	3077
10	Sun	W.	124° 14' 33"	3468	125° 35' 33"	3464	126° 56' 37"	3461	128° 17' 45"	3457
	Jupiter	W.	92° 14' 29"	3163	93° 41' 23"	3158	95° 8' 22"	3153	96° 35' 27"	3149
	Saturn	W.	87° 51' 3"	3199	89° 18' 38"	3194	90° 46' 18"	3190	92° 14' 3"	3116
	Venus	W.	79° 22' 32"	3368	80° 45' 25"	3364	82° 8' 23"	3358	83° 31' 27"	3353
	α Arietis	W.	79° 30' 43"	3087	80° 59' 9"	3082	82° 27' 40"	3078	83° 56' 16"	3073
	Aldebaran	W.	46° 41' 29"	3115	48° 9' 20"	3110	49° 37' 18"	3104	51° 5' 23"	3097
	Regulus	E.	33° 27' 19"	3118	31° 59' 31"	3110	30° 31' 45"	3190	29° 4' 0"	3122
	Spica	E.	87° 14' 12"	3064	85° 45' 18"	3060	84° 16' 19"	3056	82° 47' 15"	3052
11	Jupiter	W.	103° 52' 16"	3192	105° 19' 59"	3116	106° 47' 49"	3110	108° 15' 46"	3104
	Saturn	W.	99° 34' 15"	3090	101° 2' 37"	3083	102° 31' 7"	3078	103° 59' 46"	3069
	α Arietis	W.	91° 20' 50"	3046	92° 50' 6"	3039	94° 19' 30"	3033	95° 49' 2"	3026
	Venus	W.	90° 28' 30"	3390	91° 52' 18"	3313	93° 16' 15"	3305	94° 40' 21"	3297
	Aldebaran	W.	58° 27' 55"	3061	59° 56' 52"	3053	61° 25' 59"	3045	62° 55' 16"	3038
	Spica	E.	75° 20' 25"	3094	73° 50' 42"	3018	72° 20' 51"	3011	70° 50' 52"	3004
12	α Arietis	W.	103° 18' 52"	2969	104° 49' 18"	2961	106° 19' 54"	2973	107° 50' 41"	2965
	Venus	W.	101° 43' 20"	3252	103° 8' 28"	3242	104° 33' 47"	3232	105° 59' 18"	3223
	Aldebaran	W.	70° 24' 10"	2995	71° 54' 29"	2986	73° 24' 59"	2977	74° 55' 41"	2968
	Pollux	W.	29° 15' 22"	3188	30° 41' 45"	3160	32° 8' 42"	3135	33° 36' 9"	3119
	Spica	E.	63° 18' 40"	2966	61° 47' 45"	2958	60° 16' 39"	2949	58° 45' 22"	2941
	Antares	E.	108° 50' 9"	2969	107° 19' 17"	2961	105° 48' 15"	2952	104° 17' 2"	2943
13	Aldebaran	W.	82° 32' 6"	2990	84° 3' 59"	2910	85° 36' 5"	2901	87° 8' 23"	2891
	Pollux	W.	40° 59' 55"	3015	42° 29' 49"	2998	44° 0' 4"	2982	45° 30' 39"	2966
	Spica	E.	51° 6' 14"	2985	49° 33' 49"	2987	48° 1' 13"	2977	46° 28' 25"	2968
	Antares	E.	96° 38' 6"	2997	95° 5' 43"	2987	93° 33' 8"	2978	92° 0' 21"	2968
14	Aldebaran	W.	94° 53' 2"	2942	96° 26' 36"	2931	98° 0' 23"	2922	99° 34' 22"	2912
	Pollux	W.	53° 8' 15"	2996	54° 40' 39"	2983	56° 13' 20"	2969	57° 46' 18"	2957
	Spica	E.	38° 41' 24"	2991	37° 7' 23"	2911	35° 33' 10"	2902	33° 58' 45"	2793
	Antares	E.	84° 13' 15"	2918	82° 39' 11"	2909	81° 4' 55"	2799	79° 30' 26"	2789
15	Aldebaran	W.	107° 27' 28"	2765	109° 2' 42"	2756	110° 38' 8"	2747	112° 13' 46"	2737
	Pollux	W.	65° 35' 5"	2798	67° 9' 36"	2786	68° 44' 22"	2775	70° 19' 23"	2764
	Regulus	W.	28° 32' 56"	2902	30° 7' 21"	2786	31° 42' 7"	2771	33° 17' 13"	2756
	Spica	E.	26° 3' 47"	2751	24° 28' 15"	2744	22° 52' 33"	2737	21° 16' 42"	2731
	Antares	E.	71° 34' 45"	2740	69° 58' 58"	2730	68° 22' 58"	2721	66° 46' 46"	2711
16	Pollux	W.	78° 17' 58"	2712	79° 54' 22"	2702	81° 30' 59"	2693	83° 7' 48"	2684
	Regulus	W.	41° 17' 16"	2902	42° 54' 6"	2931	44° 31' 12"	2970	46° 8' 32"	2959
	Antares	E.	58° 42' 37"	2965	57° 5' 10"	2957	55° 27' 32"	2948	53° 49' 42"	2939
17	Pollux	W.	91° 15' 0"	2939	92° 53' 2"	2931	94° 31' 15"	2923	96° 9' 39"	2915
	Regulus	W.	54° 18' 45"	2909	55° 57' 28"	2900	57° 36' 23"	2901	59° 15' 31"	2891
	Antares	E.	45° 37' 40"	2909	43° 58' 43"	2901	42° 19' 36"	2904	40° 40' 19"	2897
	α Aquilæ	E.	98° 52' 50"	3063	97° 23' 55"	3051	95° 54' 45"	3040	94° 25' 22"	3030
18	Pollux	W.	104° 24' 12"	2979	106° 3' 36"	2972	107° 43' 9"	2966	109° 22' 50"	2960
	Regulus	W.	67° 34' 14"	2939	69° 14' 33"	2930	70° 55' 4"	2923	72° 35' 45"	2915

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
18	Antares E.	39° 0' 53"	2570	37° 21' 17"	2564	35° 41' 32"	2558	34° 1' 35"	2552
	α Aquilæ E.	92 55 46	3020	91 25 58	3011	89 55 59	3003	88 25 50	2996
	Mars E.	108 35 26	2829	107 1 36	2821	105 27 35	2811	103 53 22	2803
19	Regulus W.	74 16 37	2507	75 57 40	2500	77 38 53	2493	79 20 16	2485
	Spica W.	20 13 45	2516	21 54 36	2505	23 35 42	2495	25 17 2	2486
	α Aquilæ E.	80 53 12	2973	79 22 25	2971	77 51 36	2970	76 20 46	2970
	Mars E.	95 59 36	2763	94 24 20	2755	92 48 53	2747	91 13 16	2741
	Sun E.	136 31 59	2855	134 58 43	2846	133 25 15	2837	131 51 35	2828
20	Regulus W.	87 49 45	2451	89 32 7	2444	91 14 39	2437	92 57 21	2431
	Spica W.	33 46 49	2444	35 29 21	2437	37 12 3	2430	38 54 55	2422
	α Aquilæ E.	68 47 3	2988	67 16 35	2985	65 46 16	2984	64 16 8	2984
	Mars E.	83 12 49	2705	81 36 16	2698	79 59 33	2691	78 22 41	2685
	Sun E.	124 0 21	2785	122 25 34	2777	120 50 36	2769	119 15 28	2761
21	Regulus W.	101 33 2	2401	103 16 36	2394	105 0 19	2389	106 44 10	2383
	Spica W.	47 31 46	2389	49 15 37	2389	50 59 37	2376	52 43 46	2369
	α Aquilæ E.	56 49 34	2998	55 21 22	2994	53 53 41	2989	52 26 34	2983
	Mars E.	70 16 17	2654	68 38 35	2648	67 0 45	2643	65 22 48	2637
	Sun E.	111 17 16	2725	109 41 9	2718	108 4 53	2710	106 28 27	2704
22	Spica W.	61 26 45	2340	63 11 46	2335	64 56 55	2329	66 42 12	2323
	Antares W.	16 11 27	2424	17 54 27	2403	19 37 57	2396	21 21 52	2379
	α Aquilæ E.	45 22 4	2414	44 0 3	2400	42 39 16	2354	41 19 51	2350
	Mars E.	57 11 13	2619	55 32 34	2607	53 53 48	2602	52 14 56	2599
	Sun E.	98 24 8	2672	96 46 51	2666	95 9 25	2660	93 31 51	2654
23	Spica W.	75 30 37	2298	77 16 40	2293	79 2 50	2288	80 49 7	2283
	Antares W.	30 5 47	2322	31 51 14	2315	33 36 52	2307	35 22 41	2301
	Mars E.	43 59 22	2583	42 20 3	2581	40 40 42	2580	39 1 19	2578
	Sun E.	85 22 6	2696	83 43 47	2691	82 5 21	2616	80 26 48	2612
24	Spica W.	89 42 8	2264	91 29 1	2260	93 16 0	2256	95 3 4	2253
	Antares W.	44 13 52	2275	46 0 28	2270	47 47 11	2266	49 34 1	2262
	Mars E.	30 44 28	2588	29 5 17	2594	27 26 14	2603	25 47 23	2613
	Sun E.	72 12 33	2591	70 33 25	2588	68 54 13	2584	67 14 56	2582
25	Spica W.	103 59 27	2241	105 46 53	2239	107 34 22	2238	109 21 53	2237
	Antares W.	58 29 25	2247	60 16 42	2245	62 4 2	2244	63 51 24	2243
	Sun E.	58 57 40	2571	57 18 5	2570	55 38 29	2569	53 58 52	2569
26	Antares W.	72 48 37	2241	74 36 4	2241	76 23 30	2242	78 10 55	2243
	α Aquilæ W.	31 33 32	2756	32 33 45	2758	33 37 30	2760	34 44 26	2761
	Sun E.	45 40 51	2574	44 1 21	2577	42 21 55	2580	40 42 33	2585
27	Antares W.	87 7 16	2257	88 54 19	2260	90 41 17	2264	92 28 9	2270
	α Aquilæ W.	40 56 51	2502	42 17 13	2492	43 39 5	2481	45 2 17	2470
	Sun E.	32 27 29	2617	30 48 57	2607	29 10 39	2598	27 32 36	2591
31	Sun W.	20 5 17	2014	21 35 12	2014	23 5 7	2017	24 34 59	2022
	Aldebaran E.	38 35 27	2634	36 57 18	2634	35 19 36	2675	33 42 22	2698
	Pollux E.	80 34 3	2616	78 55 30	2631	77 17 17	2646	75 39 24	2660

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVb.	P. L. of Diff.	XVIIIb.	P. L. of Diff.	XXIb.	P. L. of Diff.
18	Antares	E.	32° 21' 38"	2546	30° 41' 29"	2549	29° 1' 14"	2538	27° 20' 53"	2534
	α Aquilæ	E.	86 55 32	2989	85 25 6	2984	83 54 33	2980	82 23 55	2976
	Mars	E.	102 18 58	2795	100 44 23	2787	99 9 38	2779	97 34 42	2771
19	Regulus	W.	81 1 50	2478	82 43 34	2471	84 25 28	2464	86 7 32	2458
	Spica	W.	26 58 35	2477	28 40 21	2468	30 22 19	2460	32 4 28	2452
	α Aquilæ	E.	74 49 56	2971	73 19 7	2973	71 48 21	2977	70 17 39	2981
	Mars	E.	89 37 30	2733	88 1 34	2725	86 25 28	2719	84 49 13	2712
	SUN	E.	130 17 43	2818	128 43 39	2810	127 9 24	2801	125 34 58	2793
20	Regulus	W.	94 40 12	2425	96 23 11	2419	98 6 19	2412	99 49 36	2406
	Spica	W.	40 37 58	2415	42 21 11	2409	44 4 33	2402	45 48 5	2396
	α Aquilæ	E.	62 46 13	2927	61 16 34	2942	59 47 13	2958	58 18 12	2977
	Mars	E.	76 45 41	2679	75 8 33	2672	73 31 16	2666	71 53 51	2660
	SUN	E.	117 40 9	2753	116 4 40	2747	114 29 2	2739	112 53 14	2732
21	Regulus	W.	108 28 9	2378	110 12 16	2373	111 56 30	2367	113 40 52	2362
	Spica	W.	54 28 5	2363	56 12 33	2357	57 57 9	2352	59 41 53	2346
	α Aquilæ	E.	51 0 4	2919	49 34 17	2929	48 9 17	2935	46 45 11	2946
	Mars	E.	63 44 43	2632	62 6 31	2636	60 28 12	2641	58 49 46	2646
	SUN	E.	104 51 53	2698	103 15 10	2691	101 38 18	2684	100 1 17	2678
22	Spica	W.	68 27 38	2317	70 13 12	2313	71 58 53	2308	73 44 41	2302
	Antares	W.	23 6 7	2359	24 50 40	2348	26 35 29	2339	28 20 32	2331
	α Aquilæ	E.	40 1 59	2736	38 45 50	2846	37 31 35	2979	36 19 28	4117
	Mars	E.	50 35 59	2595	48 56 57	2591	47 17 50	2588	45 38 38	2585
	SUN	E.	91 54 9	2648	90 16 19	2643	88 38 22	2638	87 0 18	2632
23	Spica	W.	82 35 31	2279	84 22 1	2275	86 8 37	2270	87 55 20	2267
	Antares	W.	37 8 39	2295	38 54 46	2289	40 41 1	2285	42 27 23	2280
	Mars	E.	37 21 54	2578	35 42 29	2580	34 3 6	2581	32 23 45	2584
	SUN	E.	78 48 9	2607	77 9 24	2603	75 30 33	2599	73 51 36	2594
24	Spica	W.	96 50 13	2249	98 37 26	2247	100 24 43	2245	102 12 3	2243
	Antares	W.	51 20 57	2258	53 7 58	2256	54 55 3	2253	56 42 12	2250
	Mars	E.	24 8 46	2687	22 30 28	2648	20 52 35	2671	19 15 16	2704
	SUN	E.	65 35 36	2579	63 56 12	2576	62 16 44	2574	60 37 13	2572
25	Spica	W.	111 9 25	2237	112 56 58	2236	114 44 32	2236	116 32 6	2236
	Antares	W.	65 38 48	2241	67 26 14	2241	69 13 41	2240	71 1 9	2240
	SUN	E.	52 19 14	2569	50 39 37	2569	49 0 0	2570	47 20 24	2572
26	Antares	W.	79 58 18	2245	81 45 38	2247	83 32 55	2250	85 20 8	2253
	α Aquilæ	W.	35 54 15	2955	37 6 39	2919	38 21 22	2929	39 38 10	2954
	SUN	E.	39 3 17	2589	37 24 7	2595	35 45 5	2601	34 6 12	2609
27	Antares	W.	94 14 53	2274	96 1 30	2280	97 47 59	2286	99 34 19	2293
	α Aquilæ	W.	46 26 40	2926	47 52 7	2917	49 18 32	2914	50 45 48	2917
	SUN	E.	25 54 50	2666	24 17 24	2683	22 40 21	2704	21 3 46	2730
31	SUN	W.	26 4 44	2630	27 34 20	2638	29 3 46	2647	30 33 0	2657
	Aldebaran	E.	32 5 39	2722	30 29 28	2747	28 53 50	2774	27 18 48	2805
	Pollux	E.	74 1 51	2676	72 24 39	2692	70 47 49	2708	69 11 20	2724

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sideral Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.		subtracted from Apparent Time.	
Frid.	1	^h 0 ^m 43 ^s 46.84	9.103	N. 4° 42' 33.8"	+57.77	16' 1.97	^m 64.52	^s 3 50.48	0.751
Sat.	2	0 47 25.38	9.108	5 5 37.6	57.55	16 1.70	64.54	3 32.52	0.746
Sun.	3	0 51 4.04	9.114	5 28 36.0	57.32	16 1.43	64.56	3 14.67	0.740
Mon.	4	0 54 42.85	9.120	5 51 28.4	57.06	16 1.16	64.57	2 56.97	0.734
Tues.	5	0 58 21.80	9.126	6 14 14.7	56.79	16 0.89	64.60	2 39.43	0.728
Wed.	6	1 2 0.93	9.134	6 36 54.5	56.51	16 0.62	64.63	2 22.05	0.720
Thur.	7	1 5 40.25	9.143	6 59 27.4	56.23	16 0.35	64.66	2 4.86	0.711
Frid.	8	1 9 19.78	9.152	7 21 53.1	55.92	16 0.08	64.70	1 47.88	0.702
Sat.	9	1 12 59.54	9.162	7 44 11.3	55.60	15 59.81	64.74	1 31.13	0.692
Sun.	10	1 16 39.56	9.172	8 6 21.6	55.26	15 59.55	64.78	1 14.64	0.682
Mon.	11	1 20 19.85	9.184	8 28 23.8	54.92	15 59.28	64.82	0 58.43	0.670
Tues.	12	1 24 0.42	9.196	8 50 17.5	54.55	15 59.01	64.87	0 42.49	0.658
Wed.	13	1 27 41.29	9.209	9 12 2.3	54.18	15 58.74	64.92	0 26.84	0.645
Thur.	14	1 31 22.48	9.223	9 33 38.1	53.79	15 58.48	64.97	0 11.52	0.631
Frid.	15	1 35 4.02	9.238	9 55 4.5	53.40	15 58.21	65.02	0 3.45	0.616
Sat.	16	1 38 45.92	9.253	10 16 21.0	52.98	15 57.94	65.08	0 18.06	0.601
Sun.	17	1 42 28.21	9.269	10 37 27.5	52.54	15 57.67	65.13	0 32.30	0.585
Mon.	18	1 46 10.89	9.287	10 58 23.6	52.10	15 57.41	65.19	0 46.12	0.568
Tues.	19	1 49 54.00	9.305	11 19 8.9	51.66	15 57.14	65.25	0 59.53	0.550
Wed.	20	1 53 37.54	9.324	11 39 43.2	51.19	15 56.88	65.31	1 12.51	0.531
Thur.	21	1 57 21.53	9.343	12 0 6.1	50.71	15 56.61	65.37	1 25.04	0.512
Frid.	22	2 1 5.99	9.363	12 20 17.4	50.22	15 56.35	65.44	1 37.10	0.492
Sat.	23	2 4 50.92	9.383	12 40 16.7	49.71	15 56.09	65.51	1 48.69	0.472
Sun.	24	2 8 36.34	9.403	13 0 3.6	49.18	15 55.82	65.58	1 59.80	0.452
Mon.	25	2 12 22.25	9.424	13 19 37.6	48.65	15 55.57	65.65	2 10.41	0.431
Tues.	26	2 16 8.66	9.445	13 38 58.5	48.09	15 55.32	65.72	2 20.52	0.410
Wed.	27	2 19 55.58	9.466	13 58 5.8	47.53	15 55.07	65.78	2 30.13	0.389
Thur.	28	2 23 43.01	9.488	14 16 59.6	46.95	15 54.83	65.86	2 39.22	0.367
Frid.	29	2 27 30.97	9.508	14 35 39.3	46.35	15 54.59	65.93	2 47.80	0.347
Sat.	30	2 31 19.45	9.530	14 54 4.4	45.74	15 54.35	66.01	2 55.85	0.325
Sun.	31	2 35 8.45	9.552	N.15 12 14.8	+45.12	15 54.12	66.09	3 3.38	0.303

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0°.18 from the Sideral Time.

+ prefixed to the hourly change of declination indicates that the north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be subtracted from	Diff. for 1 hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
Frid.	1	^h 0 ^m 43 ^s 46.26	^s 9.105	N. 4° 42' 30.0"	+57.78	^m 3 ^s 50.53	^s 0.751	^h 0 ^m 39 ^s 55.73
Sat.	2	0 47 24.84	9.110	5 5 34.2	57.56	3 32.56	0.746	0 43 52.28
Sun.	3	0 51 3.55	9.116	5 28 32.9	57.33	3 14.71	0.740	0 47 48.84
Mon.	4	0 54 42.40	9.122	5 51 25.6	57.07	2 57.01	0.734	0 51 45.39
Tues.	5	0 58 21.40	9.128	6 14 12.2	56.80	2 39.46	0.728	0 55 41.94
Wed.	6	1 2 0.58	9.136	6 36 52.3	56.52	2 22.08	0.720	0 59 38.49
Thur.	7	1 5 39.94	9.145	6 59 25.5	56.24	2 4.89	0.711	1 3 35.05
Frid.	8	1 9 19.51	9.154	7 21 51.5	55.93	1 47.91	0.702	1 7 31.60
Sat.	9	1 12 59.31	9.164	7 44 10.0	55.61	1 31.15	0.692	1 11 28.16
Sun.	10	1 16 39.37	9.174	8 6 20.5	55.27	1 14.66	0.682	1 15 24.71
Mon.	11	1 20 19.70	9.186	8 28 23.0	54.93	0 58.44	0.670	1 19 21.26
Tues.	12	1 24 0.31	9.198	8 50 16.9	54.56	0 42.50	0.658	1 23 17.81
Wed.	13	1 27 41.22	9.211	9 12 2.0	54.19	0 26.85	0.645	1 27 14.37
Thur.	14	1 31 22.45	9.225	9 33 38.0	53.80	0 11.53	0.631	1 31 10.92
Frid.	15	1 35 4.03	9.240	9 55 4.6	53.41	0 3.45	0.616	1 35 7.48
Sat.	16	1 38 45.97	9.255	10 16 21.3	52.99	0 18.06	0.601	1 39 4.03
Sun.	17	1 42 28.29	9.271	10 37 28.0	52.55	0 32.30	0.585	1 43 0.59
Mon.	18	1 46 11.01	9.288	10 58 24.3	52.11	0 46.13	0.568	1 46 57.14
Tues.	19	1 49 54.15	9.306	11 19 9.8	51.67	0 59.54	0.550	1 50 53.69
Wed.	20	1 53 37.72	9.325	11 39 44.3	51.20	1 12.52	0.531	1 54 50.24
Thur.	21	1 57 21.75	9.344	12 0 7.4	50.74	1 25.05	0.512	1 58 46.80
Frid.	22	2 1 6.24	9.364	12 20 18.8	50.23	1 37.11	0.492	2 2 43.35
Sat.	23	2 4 51.20	9.384	12 40 18.3	49.72	1 48.70	0.472	2 6 39.91
Sun.	24	2 8 36.65	9.404	13 0 5.3	49.19	1 59.81	0.452	2 10 36.46
Mon.	25	2 12 22.59	9.425	13 19 39.4	48.66	2 10.43	0.431	2 14 33.02
Tues.	26	2 16 9.03	9.446	13 39 0.4	48.10	2 20.54	0.410	2 18 29.57
Wed.	27	2 19 55.98	9.467	13 58 7.9	47.53	2 30.15	0.389	2 22 26.13
Thur.	28	2 23 43.44	9.489	14 17 1.7	46.95	2 39.24	0.367	2 26 22.68
Frid.	29	2 27 31.42	9.509	14 35 41.5	46.35	2 47.82	0.347	2 30 19.24
Sat.	30	2 31 19.92	9.531	14 54 6.7	45.74	2 55.87	0.325	2 34 15.79
Sun.	31	2 35 8.94	9.553	N.15 12 17.2	+45.12	3 3.40	0.303	2 38 12.35

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

+ prefixed to the hourly change of declination indicates that the north declinations are increasing.

Diff. for 1 hour,

+ 9.8565.

(Table III.)

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal $^{\circ}$.	
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ'						
1	91	11 ⁰ 54' 25.2	53 ¹ 56.0	147.88	+0.18	0.0000120	+51.7	h m s 23 16 14.91	
2	92	12 53 33.1	53 3.8	147.78	+0.08	.0001356	51.4	23 12 19.00	
3	93	13 52 38.7	52 9.3	147.69	-0.05	.0002586	51.1	23 8 23.09	
4	94	14 51 42.1	51 12.6	147.59	0.18	.0003811	50.9	23 4 27.18	
5	95	15 50 43.2	50 13.6	147.50	0.32	.0005030	50.7	23 0 31.28	
6	96	16 49 42.1	49 12.4	147.40	0.45	.0006245	50.6	22 56 35.37	
7	97	17 48 38.6	48 8.8	147.31	0.58	.0007459	50.5	22 52 39.46	
8	98	18 47 32.7	47 2.8	147.21	0.68	.0008671	50.5	22 48 43.55	
9	99	19 46 24.6	45 54.6	147.12	0.75	.0009882	50.5	22 44 47.65	
10	100	20 45 14.3	44 44.2	147.02	0.79	.0011093	50.5	22 40 51.74	
11	101	21 44 1.8	43 41.6	146.93	0.79	.0012305	50.5	22 36 55.83	
12	102	22 42 47.1	42 16.9	146.85	0.79	.0013517	50.5	22 32 59.92	
13	103	23 41 30.5	41 0.1	146.76	0.74	.0014729	50.5	22 29 4.02	
14	104	24 40 11.8	39 41.3	146.68	0.69	.0015943	50.6	22 25 8.11	
15	105	25 38 51.2	38 20.6	146.60	0.59	.0017158	50.6	22 21 12.20	
16	106	26 37 28.7	36 58.0	146.52	0.50	.0018372	50.6	22 17 16.29	
17	107	27 36 4.3	35 33.5	146.45	0.38	.0019586	50.5	22 13 20.38	
18	108	28 34 38.1	34 7.2	146.38	0.25	.0020798	50.4	22 9 24.47	
19	109	29 33 10.3	32 39.3	146.31	-0.11	.0022008	50.3	22 5 28.56	
20	110	30 31 41.0	31 9.9	146.25	0.00	.0023212	50.0	22 1 32.65	
21	111	31 30 10.2	29 38.9	146.18	+0.09	.0024410	49.7	21 57 36.75	
22	112	32 28 37.8	28 6.3	146.11	0.18	.0025600	49.3	21 53 40.84	
23	113	33 27 3.5	26 32.0	146.04	0.23	.0026779	48.9	21 49 44.93	
24	114	34 25 27.7	24 56.1	145.97	0.27	.0027948	48.4	21 45 49.02	
25	115	35 53 50.4	23 18.6	145.90	0.28	.0029105	47.9	21 41 53.12	
26	116	36 22 11.3	21 39.4	145.84	0.25	.0030248	47.3	21 37 57.21	
27	117	37 20 30.6	19 58.6	145.76	0.21	.0031377	46.7	21 34 1.30	
28	118	38 18 48.1	18 16.1	145.69	0.12	.0032491	46.1	21 30 5.39	
29	119	39 17 4.0	16 31.8	145.62	+0.02	.0033589	45.4	21 26 9.48	
30	120	40 15 18.0	14 45.7	145.55	-0.11	.0034669	44.6	21 22 13.57	
31	121	41 13 30.2	12 57.7	145.47	-0.25	0.0035733	+43.9	21 18 17.66	
NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0 ^h .0.								Diff. for 1 hour, — 9 ^s .8296. (Table II.)	

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.

	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
							^h ^m	^m	
1	15' 27.6	15' 21.8	56' 37.5	-1.77	56' 16.4	-1.72	2 6.0	2.13	2.6
2	15 16.3	15 11.1	55 56.1	1.64	55 36.9	1.54	2 57.5	2.14	3.6
3	15 6.2	15 1.9	55 19.1	1.40	55 3.2	1.24	3 48.9	2.13	4.6
4	14 58.1	14 54.9	54 49.2	1.07	54 37.4	0.88	4 39.6	2.09	5.6
5	14 52.3	14 50.4	54 27.9	0.68	54 20.9	0.47	5 29.0	2.02	6.6
6	14 49.2	14 48.7	54 16.5	-0.25	54 14.8	-0.03	6 16.7	1.95	7.6
7	14 48.9	14 49.8	54 15.6	+0.18	54 19.0	+0.39	7 2.5	1.88	8.6
8	14 51.4	14 53.7	54 24.9	0.60	54 33.3	0.79	7 46.9	1.82	9.6
9	14 56.6	15 0.1	54 43.9	0.97	54 56.6	1.14	8 30.3	1.79	10.6
10	15 4.0	15 8.4	55 11.1	1.28	55 27.3	1.41	9 13.4	1.80	11.6
11	15 13.2	15 18.2	55 44.8	1.50	56 3.3	1.57	9 57.0	1.84	12.6
12	15 23.5	15 28.8	56 22.5	1.61	56 42.0	1.62	10 42.0	1.92	13.6
13	15 34.1	15 39.3	57 1.5	1.60	57 20.5	1.55	11 29.3	2.03	14.6
14	15 44.2	15 49.0	57 38.8	1.48	57 56.1	1.38	12 19.6	2.17	15.6
15	15 53.3	15 57.3	58 12.1	1.27	58 26.7	1.15	13 13.4	2.32	16.6
16	16 0.8	16 3.9	58 39.7	1.00	58 50.9	0.85	14 10.4	2.44	17.6
17	16 6.4	16 8.4	59 0.2	0.69	59 7.7	0.54	15 9.7	2.50	18.6
18	16 10.0	16 11.1	59 13.4	0.39	59 17.3	0.25	16 9.7	2.48	19.6
19	16 11.7	16 11.9	59 19.6	+0.13	59 20.4	+0.01	17 8.6	2.40	20.6
20	16 11.7	16 11.2	59 19.7	-0.11	59 17.8	-0.21	18 5.2	2.29	21.6
21	16 10.4	16 9.2	59 14.7	0.31	59 10.4	0.41	18 59.0	2.18	22.6
22	16 7.7	16 5.9	59 5.0	0.50	58 58.5	0.59	19 50.2	2.09	23.6
23	16 3.9	16 1.5	58 50.9	0.68	58 42.3	0.77	20 39.6	2.03	24.6
24	15 58.9	15 56.0	58 32.6	0.86	58 21.8	0.94	21 28.1	2.02	25.6
25	15 52.7	15 49.2	58 10.0	1.03	57 57.1	1.12	22 16.6	2.03	26.6
26	15 45.4	15 41.4	57 43.2	1.20	57 28.4	1.26	23 5.7	2.07	27.6
27	15 37.2	15 32.8	57 12.9	1.32	56 56.7	1.37	23 55.9	2.12	28.6
28	15 28.3	15 23.7	56 40.1	1.40	56 23.2	1.41	6		0.1
29	15 19.1	15 14.5	56 6.3	1.39	55 49.7	1.36	0 47.1	2.15	1.1
30	15 10.2	15 6.0	55 33.6	1.20	55 18.3	1.23	1 38.8	2.16	2.1
31	15 2.1	14 58.6	55 4.0	1.13	54 51.0	1.01	2 30.3	2.13	3.1
32	14 55.5	14 52.9	54 39.6	-0.87	54 30.1	-0.71	3 20.7	2.07	4.1

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 1.					SUNDAY 3.				
0	2 41 33.79	2.2941	N.18 52 45.6	7.050	0	4 28 46.53	2.2928	N.22 48 40.5	2.099
1	2 43 47.26	2.2950	19 0 21.4	7.542	1	4 31 0.19	2.2972	22 50 42.9	1.981
2	2 46 0.79	2.2959	19 7 50.6	7.433	2	4 33 13.79	2.2969	22 52 38.2	1.989
3	2 48 14.37	2.2967	19 15 13.3	7.323	3	4 35 27.33	2.2952	22 54 26.3	1.743
4	2 50 28.00	2.2975	19 22 29.4	7.213	4	4 37 40.81	2.2942	22 56 7.4	1.696
5	2 52 41.67	2.2983	19 29 38.9	7.103	5	4 39 54.23	2.2931	22 57 41.4	1.508
6	2 54 55.39	2.2991	19 36 41.8	6.993	6	4 42 7.58	2.2918	22 59 8.3	1.390
7	2 57 9.16	2.2998	19 43 38.1	6.881	7	4 44 20.85	2.2906	23 0 26.2	1.272
8	2 59 22.97	2.3005	19 50 27.6	6.769	8	4 46 34.05	2.2913	23 1 41.0	1.155
9	3 1 36.82	2.3012	19 57 10.4	6.657	9	4 48 47.17	2.2910	23 2 46.8	1.038
10	3 3 50.71	2.3018	20 3 46.5	6.545	10	4 51 0.21	2.2917	23 3 45.6	0.921
11	3 6 4.64	2.3024	20 10 15.8	6.432	11	4 53 13.17	2.2913	23 4 37.4	0.804
12	3 8 18.60	2.3030	20 16 38.3	6.318	12	4 55 26.04	2.2918	23 5 22.1	0.687
13	3 10 32.60	2.3036	20 22 54.0	6.206	13	4 57 38.83	2.2923	23 5 59.8	0.571
14	3 12 46.63	2.3041	20 29 2.9	6.092	14	4 59 51.52	2.2917	23 6 30.6	0.455
15	3 15 0.69	2.3046	20 35 5.0	5.978	15	5 2 4.12	2.2909	23 6 54.4	0.339
16	3 17 14.78	2.3051	20 41 0.2	5.863	16	5 4 16.62	2.2907	23 7 11.3	0.223
17	3 19 28.90	2.3055	20 46 48.5	5.748	17	5 6 29.03	2.2900	23 7 21.2	+0.108
18	3 21 43.04	2.3059	20 52 29.9	5.633	18	5 8 41.34	2.2903	23 7 24.2	-0.007
19	3 23 57.21	2.3063	20 58 4.4	5.517	19	5 10 53.54	2.2905	23 7 20.3	0.122
20	3 26 11.39	2.3065	21 3 31.9	5.401	20	5 13 5.64	2.2907	23 7 9.5	0.337
21	3 28 25.59	2.3067	21 8 52.5	5.285	21	5 15 17.63	2.2909	23 6 51.9	0.251
22	3 30 39.80	2.3070	21 14 6.1	5.168	22	5 17 29.51	2.2911	23 6 27.4	0.465
23	3 32 54.03	2.3072	N.21 19 12.7	5.052	23	5 19 41.28	2.2912	N.23 5 56.1	0.579
SATURDAY 2.					MONDAY 4.				
0	3 35 8.27	2.3074	N.21 24 12.4	4.936	0	5 21 52.93	2.2939	N.23 5 17.9	0.693
1	3 37 22.52	2.3075	21 29 5.0	4.818	1	5 24 4.46	2.2912	23 4 32.9	0.806
2	3 39 36.77	2.3075	21 33 50.6	4.701	2	5 26 15.87	2.2899	23 3 41.2	0.918
3	3 41 51.02	2.3076	21 38 29.1	4.583	3	5 28 27.17	2.2872	23 2 42.7	1.031
4	3 44 5.28	2.3077	21 43 0.6	4.466	4	5 30 38.34	2.2851	23 1 37.5	1.143
5	3 46 19.54	2.3076	21 47 25.0	4.348	5	5 32 49.38	2.2830	23 0 25.6	1.254
6	3 48 33.79	2.3074	21 51 42.4	4.231	6	5 35 0.30	2.2809	22 59 7.0	1.366
7	3 50 48.03	2.3073	21 55 52.7	4.113	7	5 37 11.09	2.2787	22 57 41.7	1.477
8	3 53 2.26	2.3071	21 59 55.9	3.994	8	5 39 21.74	2.2764	22 56 9.8	1.587
9	3 55 16.48	2.3068	22 3 52.0	3.876	9	5 41 32.26	2.2741	22 54 31.2	1.697
10	3 57 30.68	2.3066	22 7 41.1	3.758	10	5 43 42.64	2.2718	22 52 46.1	1.807
11	3 59 44.87	2.3063	22 11 23.0	3.639	11	5 45 52.88	2.2696	22 50 54.4	1.917
12	4 1 59.04	2.3060	22 14 57.8	3.521	12	5 48 2.99	2.2673	22 48 56.1	2.026
13	4 4 13.19	2.3056	22 18 25.5	3.402	13	5 50 12.96	2.2649	22 46 51.3	2.134
14	4 6 27.31	2.3051	22 21 46.1	3.284	14	5 52 22.78	2.2624	22 44 40.0	2.242
15	4 8 41.40	2.3046	22 24 59.6	3.165	15	5 54 32.45	2.2600	22 42 22.2	2.350
16	4 10 55.46	2.3041	22 28 5.9	3.046	16	5 56 41.98	2.2576	22 39 58.0	2.458
17	4 13 9.49	2.3036	22 31 5.1	2.927	17	5 58 51.36	2.2551	22 37 27.3	2.565
18	4 15 23.49	2.3030	22 33 57.2	2.809	18	6 1 0.59	2.2526	22 34 50.2	2.671
19	4 17 37.45	2.3029	22 36 42.2	2.691	19	6 3 9.67	2.2500	22 32 6.8	2.777
20	4 19 51.36	2.3014	22 39 20.1	2.572	20	6 5 18.59	2.2474	22 29 17.0	2.883
21	4 22 5.22	2.3007	22 41 50.8	2.453	21	6 7 27.36	2.2448	22 26 20.9	2.988
22	4 24 19.04	2.2999	22 44 14.4	2.335	22	6 9 35.97	2.2423	22 23 18.5	3.093
23	4 26 32.81	2.2991	22 46 31.0	2.217	23	6 11 44.43	2.2398	22 20 9.8	3.197
24	4 28 46.53	2.2982	N.22 48 40.5	2.099	24	6 13 52.74	2.2372	N.22 16 54.9	3.300

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 5.					THURSDAY 7.				
0	h m s	s	N. 22° 16' 54.9"	3.300	0	h m s	s	N. 17° 48' 50.9"	7.680
1	6 18 52.74	2.1372	22 13 33.8	3.403	1	7 53 13.87	2.0039	17 41 9.0	7.737
2	6 16 0.89	2.1344	22 10 6.5	3.506	2	7 55 13.99	2.0007	17 33 22.5	7.814
3	6 18 8.87	2.1317	22 6 33.0	3.609	3	7 57 13.95	1.9981	17 25 31.3	7.891
4	6 20 16.69	2.1290	22 2 53.4	3.710	4	7 59 13.76	1.9956	17 17 35.6	7.966
5	6 22 24.35	2.1262	21 59 7.8	3.811	5	8 1 13.42	1.9931	17 9 35.4	8.040
6	6 24 31.84	2.1235	21 55 16.1	3.912	6	8 3 12.93	1.9905	17 1 30.8	8.114
7	6 26 39.17	2.1207	21 51 18.3	4.013	7	8 5 12.28	1.9880	16 53 21.7	8.188
8	6 28 46.33	2.1180	21 47 14.5	4.112	8	8 7 11.49	1.9856	16 45 8.2	8.262
9	6 30 53.33	2.1152	21 43 4.8	4.211	9	8 9 10.56	1.9832	16 36 50.3	8.335
10	6 33 0.16	2.1124	21 38 49.2	4.309	10	8 11 9.48	1.9808	16 28 28.0	8.407
11	6 35 6.82	2.1096	21 34 27.7	4.408	11	8 13 8.26	1.9785	16 20 1.5	8.478
12	6 37 13.31	2.1068	21 30 0.3	4.506	12	8 15 6.90	1.9762	16 11 30.7	8.549
13	6 39 19.64	2.1040	21 25 27.0	4.603	13	8 17 5.41	1.9740	16 2 55.6	8.620
14	6 41 25.79	2.1011	21 20 47.9	4.700	14	8 19 3.78	1.9717	15 54 16.3	8.689
15	6 43 31.77	2.0983	21 16 3.0	4.796	15	8 21 2.01	1.9693	15 45 32.9	8.757
16	6 45 37.59	2.0956	21 11 12.4	4.891	16	8 23 0.10	1.9671	15 36 45.4	8.826
17	6 47 43.24	2.0927	21 6 16.1	4.987	17	8 24 58.06	1.9649	15 27 53.8	8.894
18	6 49 48.71	2.0898	21 1 14.0	5.081	18	8 26 55.89	1.9628	15 18 58.1	8.962
19	6 51 54.01	2.0869	20 56 6.3	5.175	19	8 28 53.60	1.9607	15 9 58.3	9.029
20	6 53 59.14	2.0841	20 50 53.0	5.269	20	8 30 51.18	1.9586	15 0 54.6	9.095
21	6 56 4.10	2.0812	20 45 34.0	5.362	21	8 32 48.63	1.9565	14 51 46.9	9.161
22	6 58 8.88	2.0783	20 40 9.5	5.454	22	8 34 45.96	1.9545	14 42 35.3	9.226
23	7 0 13.49	2.0754	N. 20° 34' 39.5"	5.546	23	8 36 43.17	1.9526	N. 14° 33' 19.8"	9.291
24	7 2 17.93	2.0726				8 38 40.27	1.9507		
WEDNESDAY 6.					FRIDAY 8.				
0	7 4 22.20	2.0697	N. 20° 29' 4.0"	5.637	0	8 40 37.25	1.9487	N. 14° 24' 0.4"	9.355
1	7 6 26.30	2.0668	20 23 23.1	5.728	1	8 42 34.12	1.9468	14 14 37.2	9.418
2	7 8 30.22	2.0639	20 17 36.7	5.818	2	8 44 30.87	1.9449	14 5 10.2	9.481
3	7 10 33.97	2.0611	20 11 44.9	5.907	3	8 46 27.51	1.9432	13 55 32.5	9.543
4	7 12 37.55	2.0582	20 5 47.8	5.997	4	8 48 24.05	1.9414	13 46 5.1	9.604
5	7 14 40.96	2.0553	19 59 45.3	6.086	5	8 50 20.48	1.9397	13 36 27.0	9.666
6	7 16 44.19	2.0525	19 53 37.5	6.173	6	8 52 16.81	1.9380	13 26 45.2	9.727
7	7 18 47.26	2.0497	19 47 24.5	6.260	7	8 54 13.04	1.9363	13 16 59.8	9.786
8	7 20 50.16	2.0468	19 41 6.3	6.347	8	8 56 9.17	1.9347	13 7 10.9	9.845
9	7 22 52.88	2.0439	19 34 42.9	6.433	9	8 58 5.20	1.9331	12 57 18.4	9.904
10	7 24 55.43	2.0419	19 28 14.3	6.520	10	9 0 1.14	1.9316	12 47 22.4	9.962
11	7 26 57.82	2.0394	19 21 40.5	6.606	11	9 1 56.99	1.9302	12 37 22.9	10.020
12	7 29 0.04	2.0366	19 15 1.6	6.690	12	9 3 52.76	1.9287	12 27 20.0	10.077
13	7 31 2.09	2.0338	19 8 17.7	6.773	13	9 5 48.44	1.9273	12 17 13.7	10.133
14	7 33 3.98	2.0301	19 1 28.8	6.857	14	9 7 44.04	1.9259	12 7 4.0	10.189
15	7 35 5.70	2.0273	18 54 34.9	6.939	15	9 9 39.55	1.9245	11 56 51.0	10.244
16	7 37 7.25	2.0245	18 47 36.1	7.022	16	9 11 34.98	1.9233	11 46 34.7	10.298
17	7 39 8.64	2.0218	18 40 32.3	7.104	17	9 13 30.34	1.9221	11 36 15.2	10.352
18	7 41 9.87	2.0191	18 33 23.6	7.185	18	9 15 25.63	1.9209	11 25 52.4	10.406
19	7 43 10.93	2.0164	18 26 10.1	7.265	19	9 17 20.85	1.9197	11 15 26.4	10.459
20	7 45 11.83	2.0138	18 18 51.8	7.345	20	9 19 16.00	1.9186	11 4 57.3	10.511
21	7 47 12.58	2.0112	18 11 28.7	7.425	21	9 21 11.08	1.9175	10 54 25.1	10.562
22	7 49 13.17	2.0085	18 4 0.8	7.504	22	9 23 6.10	1.9165	10 43 49.8	10.613
23	7 51 13.60	2.0058	17 56 28.2	7.582	23	9 25 1.06	1.9156	10 33 11.5	10.663
24	7 53 13.87	2.0032	N. 17° 48' 50.9"	7.660	24	9 26 55.97	1.9147	N. 10° 22' 30.2"	10.713

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 9.					MONDAY 11.				
0	9 26 55.97	1.9147	N. 10° 22' 30.2"	10.713	0	10 58 43.26	1.9303	N. 1° 3' 8.6"	12.398
1	9 28 50.82	1.9138	10 11 45.9	10.702	1	11 0 39.12	1.9319	0 50 48.4	12.344
2	9 30 45.62	1.9129	10 0 58.7	10.811	2	11 2 35.09	1.9337	0 38 27.3	12.359
3	9 32 40.37	1.9122	9 50 8.6	10.859	3	11 4 31.16	1.9354	0 26 5.3	12.373
4	9 34 35.08	1.9115	9 39 15.6	10.907	4	11 6 27.34	1.9379	0 13 42.5	12.387
5	9 36 29.75	1.9108	9 28 19.8	10.953	5	11 8 23.63	1.9399	N. 0 1 18.9	12.399
6	9 38 24.37	1.9101	9 17 21.2	11.000	6	11 10 20.04	1.9419	S. 0 11 5.4	12.411
7	9 40 18.96	1.9095	9 6 19.8	11.046	7	11 12 16.57	1.9439	0 23 30.4	12.423
8	9 42 13.51	1.9089	8 55 15.7	11.090	8	11 14 13.22	1.9459	0 35 56.0	12.439
9	9 44 8.03	1.9084	8 44 9.0	11.133	9	11 16 9.99	1.9473	0 48 22.2	12.441
10	9 46 2.52	1.9080	8 32 59.7	11.177	10	11 18 6.89	1.9485	1 0 48.9	12.449
11	9 47 56.99	1.9076	8 21 47.8	11.220	11	11 20 3.93	1.9518	1 13 16.0	12.456
12	9 49 51.43	1.9073	8 10 33.3	11.263	12	11 22 1.11	1.9543	1 25 43.6	12.469
13	9 51 45.85	1.9069	7 59 16.3	11.304	13	11 23 58.43	1.9565	1 38 11.5	12.468
14	9 53 40.26	1.9067	7 47 56.8	11.346	14	11 25 55.89	1.9588	1 50 39.8	12.473
15	9 55 34.66	1.9066	7 36 34.8	11.386	15	11 27 53.49	1.9612	2 3 8.3	12.477
16	9 57 29.05	1.9064	7 25 10.5	11.425	16	11 29 51.24	1.9638	2 15 37.0	12.479
17	9 59 23.43	1.9063	7 13 43.8	11.464	17	11 31 49.15	1.9664	2 28 5.8	12.481
18	10 1 17.81	1.9063	7 2 14.8	11.503	18	11 33 47.21	1.9690	2 40 34.7	12.482
19	10 3 12.19	1.9063	6 50 43.5	11.540	19	11 35 45.43	1.9717	2 53 3.7	12.488
20	10 5 6.57	1.9063	6 39 10.0	11.577	20	11 37 43.82	1.9745	3 5 32.6	12.481
21	10 7 0.95	1.9064	6 27 34.2	11.614	21	11 39 42.37	1.9773	3 18 1.4	12.479
22	10 8 55.34	1.9067	6 15 56.3	11.649	22	11 41 41.09	1.9802	3 30 30.1	12.477
23	10 10 49.75	1.9069	N. 6 4 16.3	11.684	23	11 43 39.99	1.9830	S. 3 42 58.6	12.473
SUNDAY 10.					TUESDAY 12.				
0	10 12 44.17	1.9073	N. 5 52 34.2	11.719	0	11 45 39.07	1.9869	S. 3 55 26.8	12.468
1	10 14 38.61	1.9075	5 40 50.0	11.752	1	11 47 36.33	1.9899	4 7 54.7	12.463
2	10 16 33.07	1.9078	5 29 3.9	11.785	2	11 49 37.77	1.9923	4 20 22.3	12.456
3	10 18 27.55	1.9083	5 17 15.8	11.817	3	11 51 37.40	1.9954	4 32 49.4	12.448
4	10 20 22.06	1.9088	5 5 25.8	11.849	4	11 53 37.22	1.9986	4 45 16.0	12.439
5	10 22 16.61	1.9094	4 53 33.9	11.881	5	11 55 37.23	2.0018	4 57 42.1	12.429
6	10 24 11.19	1.9099	4 41 40.1	11.912	6	11 57 37.44	2.0052	5 10 7.5	12.418
7	10 26 5.80	1.9106	4 29 44.5	11.941	7	11 59 37.85	2.0086	5 22 32.2	12.406
8	10 28 0.46	1.9113	4 17 47.2	11.969	8	12 1 38.47	2.0121	5 34 56.2	12.393
9	10 29 55.16	1.9121	4 5 48.2	11.997	9	12 3 39.30	2.0155	5 47 19.4	12.379
10	10 31 49.91	1.9129	3 53 47.5	12.025	10	12 5 40.33	2.0190	5 59 41.7	12.364
11	10 33 44.71	1.9138	3 41 45.2	12.051	11	12 7 41.58	2.0227	6 12 3.1	12.348
12	10 35 39.56	1.9147	3 29 41.4	12.077	12	12 9 43.05	2.0263	6 24 23.5	12.331
13	10 37 34.47	1.9157	3 17 36.0	12.102	13	12 11 44.74	2.0300	6 36 42.8	12.319
14	10 39 29.44	1.9167	3 5 29.1	12.127	14	12 13 46.63	2.0338	6 49 1.0	12.293
15	10 41 24.48	1.9178	2 53 20.8	12.150	15	12 15 48.79	2.0376	7 1 18.0	12.273
16	10 43 19.58	1.9190	2 41 11.1	12.173	16	12 17 51.16	2.0414	7 12 33.7	12.251
17	10 45 14.76	1.9202	2 29 0.0	12.196	17	12 19 53.76	2.0453	7 25 48.1	12.228
18	10 47 10.01	1.9215	2 16 47.6	12.217	18	12 21 56.60	2.0493	7 38 1.1	12.205
19	10 49 5.34	1.9228	2 4 33.9	12.237	19	12 23 59.68	2.0533	7 50 12.7	12.180
20	10 51 0.75	1.9242	1 52 19.1	12.257	20	12 26 3.00	2.0574	8 2 22.7	12.153
21	10 52 56.24	1.9256	1 40 3.1	12.276	21	12 28 6.57	2.0615	8 14 31.1	12.126
22	10 54 51.82	1.9271	1 27 46.0	12.294	22	12 30 10.38	2.0657	8 26 37.8	12.097
23	10 56 47.49	1.9287	1 15 27.8	12.319	23	12 32 14.45	2.0699	8 38 42.6	12.068
24	10 58 43.26	1.9303	N. 1 3 8.6	12.348	24	12 34 18.77	2.0742	S. 8 50 46.0	12.037

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 13.					FRIDAY 15.				
0	12 34 18.77	2.0742	S. 8° 50' 46.0"	12.037	0	14 19 31.59	2.3106	S. 17° 29' 0.1"	9.043
1	12 36 23.35	2.0785	9 2 47.3	12.006	1	14 21 50.93	2.3251	17 37 59.8	8.948
2	12 38 28.19	2.0828	9 14 46.7	11.973	2	14 24 10.60	2.3306	17 46 53.8	8.852
3	12 40 33.29	2.0873	9 26 44.0	11.938	3	14 26 30.60	2.3361	17 55 42.0	8.753
4	12 42 38.66	2.0917	9 38 39.2	11.909	4	14 28 50.93	2.3415	18 4 24.2	8.653
5	12 44 44.30	2.0962	9 50 32.2	11.865	5	14 31 11.58	2.3468	18 13 0.4	8.552
6	12 46 50.20	2.1007	10 2 23.0	11.897	6	14 33 32.55	2.3522	18 21 30.4	8.449
7	12 48 56.38	2.1053	10 14 11.5	11.788	7	14 35 53.84	2.3576	18 29 54.3	8.346
8	12 51 2.84	2.1100	10 25 57.6	11.747	8	14 38 15.46	2.3630	18 38 11.9	8.240
9	12 53 9.58	2.1147	10 37 41.2	11.706	9	14 40 37.40	2.3683	18 46 23.1	8.134
10	12 55 16.60	2.1194	10 49 22.3	11.663	10	14 42 59.66	2.3736	18 54 27.9	8.027
11	12 57 23.91	2.1242	11 1 0.8	11.618	11	14 45 22.23	2.3788	19 2 26.3	7.918
12	12 59 31.50	2.1289	11 12 36.5	11.573	12	14 47 45.12	2.3841	19 10 18.1	7.807
13	13 1 39.38	2.1337	11 24 9.5	11.527	13	14 50 8.32	2.3893	19 18 3.2	7.696
14	13 3 47.55	2.1387	11 35 39.7	11.478	14	14 52 31.83	2.3945	19 25 41.6	7.582
15	13 5 56.02	2.1437	11 47 6.9	11.428	15	14 54 55.66	2.3997	19 33 13.1	7.468
16	13 8 4.79	2.1486	11 58 31.1	11.378	16	14 57 19.79	2.4047	19 40 37.8	7.353
17	13 10 13.85	2.1535	12 9 52.2	11.328	17	14 59 44.22	2.4097	19 47 55.5	7.236
18	13 12 23.21	2.1586	12 21 10.2	11.273	18	15 2 8.95	2.4147	19 55 6.1	7.118
19	13 14 32.88	2.1637	12 32 24.9	11.218	19	15 4 33.98	2.4197	20 2 9.6	6.999
20	13 16 42.85	2.1687	12 43 36.3	11.162	20	15 6 59.31	2.4246	20 9 6.0	6.879
21	13 18 53.12	2.1738	12 54 44.3	11.104	21	15 9 24.93	2.4294	20 15 55.1	6.758
22	13 21 3.70	2.1790	13 5 48.8	11.046	22	15 11 50.84	2.4343	20 22 36.9	6.635
23	13 23 14.60	2.1842	S. 13° 16' 49.8"	10.987	23	15 14 17.04	2.4391	S. 20° 29' 11.3"	6.510
THURSDAY 14.					SATURDAY 16.				
0	13 25 25.81	2.1894	S. 13° 27' 47.2"	10.925	0	15 16 43.53	2.4438	S. 20° 35' 38.1"	6.384
1	13 27 37.33	2.1947	13 38 40.8	10.869	1	15 19 10.29	2.4483	20 41 57.4	6.258
2	13 29 49.17	2.1999	13 49 30.6	10.798	2	15 21 37.32	2.4528	20 48 9.1	6.132
3	13 32 1.32	2.2052	14 0 16.6	10.733	3	15 24 4.63	2.4574	20 54 13.2	6.003
4	13 34 13.79	2.2105	14 10 58.6	10.667	4	15 26 32.21	2.4619	21 0 9.5	5.873
5	13 36 26.58	2.2159	14 21 36.6	10.598	5	15 29 0.06	2.4663	21 5 58.0	5.742
6	13 38 39.70	2.2213	14 32 10.4	10.528	6	15 31 28.17	2.4706	21 11 38.6	5.611
7	13 40 53.14	2.2267	14 42 40.0	10.458	7	15 33 56.53	2.4748	21 17 11.3	5.478
8	13 43 6.90	2.2320	14 53 5.3	10.386	8	15 36 25.14	2.4789	21 22 36.0	5.344
9	13 45 20.98	2.2374	15 3 26.3	10.313	9	15 38 54.00	2.4831	21 27 52.6	5.208
10	13 47 35.39	2.2428	15 13 42.8	10.238	10	15 41 23.11	2.4873	21 33 1.0	5.073
11	13 49 50.12	2.2483	15 23 54.8	10.163	11	15 43 52.46	2.4911	21 38 1.2	4.935
12	13 52 5.18	2.2537	15 34 2.2	10.084	12	15 46 22.04	2.4949	21 42 53.2	4.797
13	13 54 20.57	2.2592	15 44 4.9	10.005	13	15 48 51.85	2.4987	21 47 36.9	4.659
14	13 56 36.29	2.2647	15 54 2.8	9.924	14	15 51 21.88	2.5023	21 52 12.3	4.519
15	13 58 52.33	2.2701	16 3 55.8	9.842	15	15 53 52.13	2.5059	21 56 39.2	4.378
16	14 1 8.70	2.2757	16 13 43.9	9.759	16	15 56 22.59	2.5094	22 0 57.7	4.237
17	14 3 25.41	2.2812	16 23 26.9	9.674	17	15 58 53.26	2.5128	22 5 7.7	4.095
18	14 5 42.45	2.2867	16 33 4.8	9.588	18	16 1 24.13	2.5162	22 9 9.1	3.952
19	14 7 59.82	2.2922	16 42 37.5	9.501	19	16 3 55.20	2.5194	22 13 1.9	3.807
20	14 10 17.52	2.2977	16 52 4.9	9.413	20	16 6 26.46	2.5226	22 16 46.0	3.662
21	14 12 35.55	2.3032	17 1 27.0	9.323	21	16 8 57.91	2.5257	22 20 21.4	3.517
22	14 14 53.90	2.3086	17 10 43.6	9.231	22	16 11 29.54	2.5286	22 23 48.0	3.371
23	14 17 12.58	2.3141	17 19 54.7	9.138	23	16 14 1.34	2.5314	22 27 5.9	3.225
24	14 19 31.59	2.3196	S. 17° 29' 0.1"	9.043	24	16 16 33.31	2.5342	S. 22° 30' 15.0"	3.077

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 17.					TUESDAY 19.				
0	16 16 33.31	2.5342	S. 22° 30' 15.0	3.077	0	18 19 16.33	2.5364	S. 22° 1' 42.0	4.255
1	16 19 5.44	2.5368	22 33 15.2	2.928	1	18 21 48.44	2.5338	21 57 22.3	4.402
2	16 21 37.73	2.5394	22 36 6.4	2.779	2	18 24 20.39	2.5319	21 52 53.8	4.548
3	16 24 10.17	2.5418	22 38 48.7	2.630	3	18 26 52.18	2.5295	21 48 16.6	4.693
4	16 26 42.75	2.5442	22 41 22.0	2.480	4	18 29 23.81	2.5267	21 43 30.7	4.836
5	16 29 15.47	2.5464	22 43 46.3	2.330	5	18 31 55.27	2.5238	21 38 36.3	4.979
6	16 31 48.32	2.5485	22 46 1.6	2.179	6	18 34 26.55	2.5198	21 33 33.3	5.122
7	16 34 21.29	2.5505	22 48 7.8	2.027	7	18 36 57.65	2.5168	21 28 21.7	5.263
8	16 36 54.38	2.5524	22 50 4.8	1.874	8	18 39 28.57	2.5137	21 23 1.7	5.403
9	16 39 27.58	2.5542	22 51 52.7	1.722	9	18 41 59.30	2.5105	21 17 33.3	5.543
10	16 42 0.89	2.5559	22 53 31.4	1.569	10	18 44 29.83	2.5073	21 11 56.5	5.683
11	16 44 34.29	2.5574	22 55 1.0	1.417	11	18 47 0.16	2.5039	21 6 11.3	5.822
12	16 47 7.78	2.5588	22 56 21.4	1.263	12	18 49 30.30	2.5006	21 0 17.9	5.959
13	16 49 41.35	2.5602	22 57 32.6	1.109	13	18 52 0.23	2.4971	20 54 16.3	6.095
14	16 52 15.01	2.5616	22 58 34.5	0.954	14	18 54 29.95	2.4936	20 48 6.5	6.231
15	16 54 48.74	2.5627	22 59 27.1	0.799	15	18 56 59.46	2.4900	20 41 48.6	6.365
16	16 57 22.53	2.5638	23 0 10.4	0.644	16	18 59 28.75	2.4863	20 35 22.7	6.498
17	16 59 56.37	2.5644	23 0 44.4	0.490	17	19 1 57.82	2.4826	20 28 48.8	6.631
18	17 2 30.26	2.5652	23 1 9.2	0.335	18	19 4 26.66	2.4788	20 22 7.0	6.769
19	17 5 4.20	2.5659	23 1 24.6	0.179	19	19 6 55.28	2.4751	20 15 17.4	6.899
20	17 7 38.17	2.5664	23 1 30.7	-0.024	20	19 9 23.67	2.4713	20 8 20.0	7.029
21	17 10 12.17	2.5668	23 1 27.5	+0.131	21	19 11 51.82	2.4673	20 1 14.8	7.150
22	17 12 46.19	2.5672	23 1 15.0	0.287	22	19 14 19.74	2.4633	19 54 2.0	7.277
23	17 15 20.23	2.5673	S. 23° 0' 53.1	0.442	23	19 16 47.42	2.4593	S. 19° 46' 41.6	7.403
MONDAY 18.					WEDNESDAY 20.				
0	17 17 54.27	2.5673	S. 23° 0' 21.9	0.597	0	19 19 14.86	2.4552	S. 19° 39' 13.6	7.526
1	17 20 28.31	2.5673	22 50 41.4	0.753	1	19 21 42.05	2.4512	19 31 38.2	7.659
2	17 23 2.35	2.5673	22 58 51.5	0.909	2	19 24 9.00	2.4471	19 23 55.4	7.774
3	17 25 36.38	2.5670	22 57 52.3	1.064	3	19 26 35.70	2.4430	19 16 5.3	7.895
4	17 28 10.39	2.5666	22 56 43.8	1.219	4	19 29 2.15	2.4388	19 8 8.0	8.016
5	17 30 44.37	2.5661	22 55 26.0	1.374	5	19 31 28.35	2.4346	19 0 3.4	8.136
6	17 33 18.32	2.5655	22 53 58.9	1.529	6	19 33 54.30	2.4303	18 51 51.7	8.253
7	17 35 52.23	2.5647	22 52 22.5	1.684	7	19 36 19.99	2.4260	18 43 33.0	8.370
8	17 38 26.09	2.5639	22 50 36.8	1.838	8	19 38 45.42	2.4218	18 35 7.3	8.486
9	17 40 59.90	2.5630	22 48 41.9	1.993	9	19 41 10.60	2.4175	18 26 34.7	8.600
10	17 43 33.65	2.5619	22 46 37.7	2.147	10	19 43 35.52	2.4131	18 17 55.3	8.713
11	17 46 7.33	2.5607	22 44 24.3	2.300	11	19 46 0.17	2.4087	18 9 9.1	8.826
12	17 48 40.94	2.5595	22 42 1.7	2.453	12	19 48 24.56	2.4043	18 0 16.2	8.937
13	17 51 14.47	2.5581	22 39 29.9	2.606	13	19 50 48.69	2.3999	17 51 16.7	9.046
14	17 53 47.91	2.5566	22 36 49.0	2.758	14	19 53 12.55	2.3955	17 42 10.7	9.153
15	17 56 21.26	2.5551	22 33 58.9	2.911	15	19 55 36.15	2.3911	17 32 58.3	9.260
16	17 58 54.52	2.5534	22 30 59.7	3.063	16	19 57 59.48	2.3867	17 23 30.5	9.366
17	18 1 27.67	2.5516	22 27 51.4	3.213	17	20 0 22.55	2.3823	17 14 14.4	9.470
18	18 4 0.71	2.5497	22 24 34.1	3.363	18	20 2 45.36	2.3779	17 4 43.1	9.573
19	18 6 33.64	2.5478	22 21 7.8	3.513	19	20 5 7.90	2.3734	16 55 5.6	9.676
20	18 9 6.45	2.5457	22 17 32.5	3.663	20	20 7 30.17	2.3690	16 45 22.0	9.776
21	18 11 39.13	2.5435	22 13 48.2	3.812	21	20 9 52.18	2.3646	16 35 32.5	9.874
22	18 14 11.67	2.5412	22 9 55.0	3.961	22	20 12 13.92	2.3601	16 25 37.1	9.972
23	18 16 44.07	2.5388	22 5 52.9	4.108	23	20 14 35.39	2.3557	16 15 35.8	10.070
24	18 19 16.33	2.5364	S. 22° 1' 42.0	4.255	24	20 16 56.60	2.3512	S. 16° 5' 28.7	10.165

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 21.					SATURDAY 23.				
0	20 16 56.60	2.3512	S. 16° 5' 28.7"	10.165	0	22 5 11.05	2.1737	S. 6° 33' 15.3"	13.185
1	20 19 17.54	2.3468	15 55 16.0	10.358	1	22 7 21.39	2.1711	6 20 4.5	13.185
2	20 21 38.22	2.3425	15 44 57.7	10.351	2	22 9 31.58	2.1686	6 6 51.9	13.223
3	20 23 58.64	2.3381	15 34 33.9	10.442	3	22 11 41.62	2.1662	5 53 37.7	13.250
4	20 26 18.79	2.3337	15 24 4.6	10.532	4	22 13 51.52	2.1637	5 40 21.9	13.277
5	20 28 38.68	2.3293	15 13 30.0	10.621	5	22 16 1.27	2.1613	5 27 4.5	13.309
6	20 30 58.31	2.3250	15 2 50.1	10.708	6	22 18 10.88	2.1591	5 13 45.6	13.326
7	20 33 17.68	2.3207	14 52 5.0	10.794	7	22 20 20.36	2.1568	5 0 25.4	13.348
8	20 35 36.79	2.3163	14 41 14.8	10.878	8	22 22 29.70	2.1546	4 47 3.9	13.369
9	20 37 55.64	2.3121	14 30 19.6	10.962	9	22 24 38.91	2.1525	4 33 41.1	13.389
10	20 40 14.24	2.3078	14 19 19.4	11.044	10	22 26 48.00	2.1505	4 20 17.2	13.407
11	20 42 32.58	2.3036	14 8 14.3	11.125	11	22 28 56.97	2.1485	4 6 52.2	13.425
12	20 44 50.67	2.3004	13 57 4.4	11.204	12	22 31 5.82	2.1465	3 53 26.2	13.441
13	20 47 8.51	2.2969	13 45 49.8	11.282	13	22 33 14.55	2.1446	3 39 59.3	13.455
14	20 49 26.10	2.2910	13 34 30.6	11.358	14	22 35 23.17	2.1428	3 26 31.6	13.468
15	20 51 43.43	2.2868	13 23 6.8	11.433	15	22 37 31.69	2.1411	3 13 3.1	13.481
16	20 54 0.52	2.2827	13 11 38.6	11.507	16	22 39 40.10	2.1394	2 59 33.9	13.493
17	20 56 17.36	2.2787	13 0 6.0	11.580	17	22 41 48.41	2.1377	2 46 4.1	13.509
18	20 58 33.96	2.2747	12 48 29.0	11.652	18	22 43 56.62	2.1361	2 32 33.7	13.510
19	21 0 50.32	2.2707	12 36 47.7	11.721	19	22 46 4.74	2.1346	2 19 2.9	13.517
20	21 3 6.44	2.2667	12 25 2.4	11.788	20	22 48 12.77	2.1331	2 5 31.7	13.523
21	21 5 22.33	2.2628	12 13 13.1	11.855	21	22 50 20.71	2.1316	1 52 0.1	13.528
22	21 7 37.98	2.2589	12 1 19.8	11.922	22	22 52 28.56	2.1302	1 38 28.3	13.532
23	21 9 53.40	2.2550	S. 11° 49' 22.5"	11.987	23	22 54 36.34	2.1290	S. 1° 24' 56.3"	13.533
FRIDAY 22.					SUNDAY 24.				
0	21 12 8.58	2.2512	S. 11° 37' 21.4"	12.049	0	22 56 44.04	2.1278	S. 1° 11' 24.3"	13.534
1	21 14 23.54	2.2474	11 25 16.6	12.111	1	22 58 51.67	2.1266	0 57 52.2	13.534
2	21 16 38.27	2.2437	11 13 8.1	12.172	2	23 0 59.23	2.1254	0 44 20.2	13.532
3	21 18 52.78	2.2400	11 0 56.0	12.231	3	23 3 6.72	2.1243	0 30 48.3	13.530
4	21 21 7.07	2.2363	10 48 40.4	12.288	4	23 5 14.15	2.1233	0 17 16.6	13.527
5	21 23 21.14	2.2327	10 36 21.4	12.345	5	23 7 21.52	2.1223	S. 0° 3' 45.1"	13.522
6	21 25 35.00	2.2292	10 23 59.0	12.401	6	23 9 28.83	2.1214	N. 0° 9' 46.0"	13.515
7	21 27 48.64	2.2257	10 11 33.3	12.454	7	23 11 36.09	2.1206	0 23 16.7	13.507
8	21 30 2.08	2.2222	9 59 4.5	12.506	8	23 13 43.30	2.1198	0 36 46.9	13.498
9	21 32 15.31	2.2188	9 46 32.6	12.557	9	23 15 50.47	2.1192	0 50 16.5	13.488
10	21 34 28.34	2.2155	9 33 57.6	12.607	10	23 17 57.60	2.1185	1 3 45.5	13.477
11	21 36 41.17	2.2122	9 21 19.7	12.655	11	23 20 4.69	2.1178	1 17 13.8	13.466
12	21 38 53.80	2.2089	9 8 39.0	12.702	12	23 22 11.74	2.1172	1 30 41.4	13.452
13	21 41 6.24	2.2057	8 55 55.5	12.748	13	23 24 18.76	2.1167	1 44 8.1	13.437
14	21 43 18.48	2.2024	8 43 9.2	12.793	14	23 26 25.75	2.1163	1 57 33.9	13.421
15	21 45 30.53	2.1992	8 30 20.3	12.836	15	23 28 32.72	2.1159	2 10 58.6	13.404
16	21 47 42.39	2.1962	8 17 28.9	12.877	16	23 30 39.66	2.1155	2 24 22.3	13.386
17	21 49 54.08	2.1933	8 4 35.0	12.918	17	23 32 46.58	2.1152	2 37 44.9	13.367
18	21 52 5.59	2.1903	7 51 38.7	12.957	18	23 34 53.49	2.1150	2 51 6.3	13.346
19	21 54 16.92	2.1874	7 38 40.1	12.995	19	23 37 0.38	2.1148	3 4 26.4	13.324
20	21 56 28.08	2.1846	7 25 39.3	13.032	20	23 39 7.27	2.1147	3 17 45.2	13.301
21	21 58 39.07	2.1818	7 12 36.3	13.067	21	23 41 14.15	2.1147	3 31 2.5	13.276
22	22 0 49.89	2.1790	6 59 31.3	13.100	22	23 43 21.03	2.1147	3 44 18.3	13.251
23	22 3 0.55	2.1763	6 46 24.3	13.133	23	23 45 27.91	2.1147	3 57 32.6	13.224
24	22 5 11.05	2.1737	S. 6° 33' 15.3"	13.165	24	23 47 34.79	2.1148	N. 4° 10' 45.2"	13.196

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 25.					WEDNESDAY 27.				
0	23 47 34.79	2.1148	N. 4 10' 45.2"	13.196	0	1 29 59.22	2.1630	N. 13 50' 56.8"	10.567
1	23 49 41.68	2.1149	4 23 56.1	13.167	1	1 32 9.17	2.1667	14 1 28.4	10.467
2	23 51 48.58	2.1150	4 37 5.3	13.137	2	1 34 19.23	2.1685	14 11 55.3	10.407
3	23 53 55.48	2.1152	4 50 12.6	13.106	3	1 36 29.39	2.1709	14 22 17.3	10.386
4	23 56 2.40	2.1155	5 3 18.0	13.074	4	1 38 39.65	2.1719	14 32 34.4	10.343
5	23 58 9.34	2.1158	5 16 21.5	13.041	5	1 40 50.02	2.1737	14 42 46.5	10.159
6	0 0 16.30	2.1162	5 29 22.9	13.006	6	1 43 0.49	2.1754	14 52 53.5	10.074
7	0 2 23.29	2.1167	5 42 22.2	12.970	7	1 45 11.07	2.1771	15 2 55.4	9.989
8	0 4 30.30	2.1171	5 55 19.3	12.923	8	1 47 21.75	2.1788	15 12 52.2	9.903
9	0 6 37.34	2.1176	6 8 14.2	12.896	9	1 49 32.53	2.1806	15 22 43.8	9.817
10	0 8 44.41	2.1182	6 21 6.8	12.856	10	1 51 43.42	2.1823	15 32 30.2	9.798
11	0 10 51.52	2.1187	6 33 56.9	12.815	11	1 53 54.41	2.1840	15 42 11.2	9.639
12	0 12 58.66	2.1193	6 46 44.6	12.774	12	1 56 5.50	2.1857	15 51 46.9	9.550
13	0 15 5.84	2.1201	6 59 29.8	12.732	13	1 58 16.70	2.1875	16 1 17.2	9.459
14	0 17 13.07	2.1208	7 12 12.4	12.688	14	2 0 28.00	2.1899	16 10 42.0	9.368
15	0 19 20.34	2.1216	7 24 52.3	12.643	15	2 2 39.41	2.1910	16 20 1.4	9.277
16	0 21 27.66	2.1224	7 37 29.5	12.597	16	2 4 50.92	2.1937	16 29 15.2	9.183
17	0 23 35.03	2.1233	7 50 3.9	12.550	17	2 7 2.53	2.1943	16 38 23.4	9.089
18	0 25 42.45	2.1242	8 2 35.5	12.502	18	2 9 14.24	2.1960	16 47 25.9	8.995
19	0 27 49.93	2.1251	8 15 4.2	12.452	19	2 11 26.05	2.1978	16 56 22.8	8.900
20	0 29 57.46	2.1260	8 27 29.8	12.402	20	2 13 37.97	2.1995	17 5 13.9	8.804
21	0 32 5.05	2.1270	8 39 52.4	12.351	21	2 15 49.99	2.2011	17 13 59.2	8.707
22	0 34 12.70	2.1280	8 52 11.9	12.298	22	2 18 2.11	2.2027	17 22 38.7	8.609
23	0 36 20.41	2.1291	N. 9 4 28.2	12.244	23	2 20 14.32	2.2043	N. 17 31 12.3	8.512
TUESDAY 26.					THURSDAY 28.				
0	0 38 28.19	2.1302	N. 9 16 41.2	12.189	0	2 22 26.63	2.2060	N. 17 39 40.1	8.413
1	0 40 36.03	2.1313	9 28 50.9	12.134	1	2 24 39.04	2.2077	17 48 1.9	8.313
2	0 42 43.95	2.1326	9 40 57.3	12.077	2	2 26 51.55	2.2093	17 56 17.6	8.212
3	0 44 51.94	2.1338	9 53 0.2	12.019	3	2 29 4.15	2.2108	18 4 27.3	8.111
4	0 47 0.01	2.1351	10 4 59.6	11.961	4	2 31 16.84	2.2123	18 12 30.9	8.009
5	0 49 8.15	2.1363	10 16 55.5	11.901	5	2 33 29.63	2.2139	18 20 28.	7.907
6	0 51 16.36	2.1375	10 28 47.7	11.839	6	2 35 42.51	2.2154	18 28 19.8	7.805
7	0 53 24.65	2.1389	10 40 36.2	11.777	7	2 37 55.48	2.2169	18 36 5.0	7.701
8	0 55 33.03	2.1403	10 52 21.0	11.715	8	2 40 8.54	2.2183	18 43 43.9	7.596
9	0 57 41.49	2.1417	11 4 2.0	11.651	9	2 42 21.68	2.2198	18 51 16.5	7.491
10	0 59 50.03	2.1431	11 15 39.1	11.585	10	2 44 34.91	2.2213	18 58 42.8	7.385
11	1 1 58.66	2.1446	11 27 12.2	11.518	11	2 46 48.23	2.2227	19 6 2.7	7.279
12	1 4 7.38	2.1461	11 38 41.3	11.451	12	2 49 1.63	2.2240	19 13 16.3	7.172
13	1 6 16.19	2.1476	11 50 6.3	11.383	13	2 51 15.11	2.2253	19 20 23.4	7.065
14	1 8 25.09	2.1490	12 1 27.2	11.314	14	2 53 28.67	2.2266	19 27 24.1	6.957
15	1 10 34.07	2.1504	12 12 44.0	11.245	15	2 55 42.30	2.2278	19 34 18.3	6.849
16	1 12 43.14	2.1520	12 23 56.6	11.173	16	2 57 56.01	2.2291	19 41 6.0	6.740
17	1 14 52.31	2.1536	12 35 4.8	11.100	17	3 0 9.79	2.2303	19 47 47.1	6.630
18	1 17 1.58	2.1552	12 46 8.6	11.027	18	3 2 23.64	2.2314	19 54 21.6	6.520
19	1 19 10.94	2.1568	12 57 8.0	10.953	19	3 4 37.56	2.2326	20 0 49.5	6.410
20	1 21 20.40	2.1585	13 8 3.0	10.878	20	3 6 51.55	2.2337	20 7 10.8	6.299
21	1 23 29.96	2.1601	13 18 53.4	10.802	21	3 9 5.60	2.2347	20 13 25.4	6.188
22	1 25 39.62	2.1617	13 29 39.2	10.725	22	3 11 19.72	2.2357	20 19 33.3	6.076
23	1 27 49.37	2.1633	13 40 20.4	10.647	23	3 13 33.89	2.2367	20 25 34.5	5.963
24	1 29 59.22	2.1650	N. 13 50 56.8	10.567	24	3 15 48.12	2.2376	N. 20 31 28.9	5.851

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 29.					SATURDAY 30.				
0	3 15 48.12	2.2376	N.20° 31' 28.9"	5.851	0	4 9 39.77	2.2460	N.22° 18' 36.0"	3.052
1	3 18 2.40	2.2385	20 37 16.6	5.757	1	4 11 54.52	2.2457	22 21 35.6	2.934
2	3 20 16.74	2.2394	20 42 57.4	5.623	2	4 14 9.25	2.2453	22 24 28.1	2.815
3	3 22 31.13	2.2402	20 48 31.4	5.509	3	4 16 23.96	2.2449	22 27 13.4	2.696
4	3 24 45.56	2.2409	20 53 58.5	5.395	4	4 18 38.64	2.2444	22 29 51.6	2.577
5	3 27 0.04	2.2417	20 59 18.8	5.281	5	4 20 53.29	2.2440	22 32 22.6	2.457
6	3 29 14.56	2.2423	21 4 32.2	5.166	6	4 23 7.92	2.2435	22 34 46.5	2.338
7	3 31 29.12	2.2430	21 9 38.7	5.051	7	4 25 22.51	2.2428	22 37 3.2	2.219
8	3 33 43.72	2.2436	21 14 38.3	4.935	8	4 27 37.06	2.2421	22 39 12.8	2.101
9	3 35 58.35	2.2441	21 19 30.9	4.818	9	4 29 51.56	2.2413	22 41 15.3	1.982
10	3 38 13.01	2.2446	21 24 16.5	4.702	10	4 32 6.01	2.2404	22 43 10.7	1.863
11	3 40 27.70	2.2450	21 28 55.1	4.586	11	4 34 20.41	2.2396	22 44 58.9	1.744
12	3 42 42.41	2.2453	21 33 26.8	4.470	12	4 36 34.76	2.2387	22 46 40.0	1.626
13	3 44 57.14	2.2457	21 37 51.5	4.352	13	4 38 49.06	2.2377	22 48 14.0	1.507
14	3 47 11.89	2.2460	21 42 9.1	4.234	14	4 41 3.29	2.2367	22 49 40.9	1.388
15	3 49 26.66	2.2462	21 46 19.6	4.117	15	4 43 17.46	2.2357	22 51 0.6	1.269
16	3 51 41.44	2.2464	21 50 23.1	3.999	16	4 45 31.57	2.2346	22 52 13.2	1.151
17	3 53 56.23	2.2466	21 54 19.5	3.882	17	4 47 45.61	2.2334	22 53 18.7	1.033
18	3 56 11.03	2.2467	21 58 8.9	3.764	18	4 49 59.57	2.2321	22 54 17.2	0.916
19	3 58 25.83	2.2467	22 1 51.2	3.646	19	4 52 13.46	2.2308	22 55 8.6	0.798
20	4 0 40.63	2.2467	22 5 26.4	3.527	20	4 54 27.27	2.2294	22 55 52.9	0.680
21	4 2 55.43	2.2466	22 8 54.5	3.409	21	4 56 40.99	2.2280	22 56 30.2	0.563
22	4 5 10.22	2.2464	22 12 15.5	3.290	22	4 58 54.63	2.2266	22 57 0.5	0.446
23	4 7 25.00	2.2462	22 15 29.3	3.171	23	5 1 8.18	2.2250	22 57 23.7	0.328
24	4 9 39.77	2.2460	N.22 18 36.0	3.052	24	5 3 21.63	2.2234	N.22 57 39.9	0.212

PHASES OF THE MOON.

	d	h	m
☾ First Quarter,	6	3	54.2
☉ Full Moon,	13	23	50.0
☾ Last Quarter,	20	21	38.4
● New Moon,	27	22	24.6

	d	h
☾ Apogee,	6	13.8
☾ Perigee,	19	13.1

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	SUN W.	32° 2' 2"	3069	33° 30' 50"	3081	34° 59' 23"	3083	36° 27' 41"	3105
	Pollux E.	67 35 12	2740	65 59 25	2756	64 24 0	2773	62 48 57	2790
	Regulus E.	104 20 3	2690	102 43 10	2705	101 6 37	2790	99 30 24	2735
2	SUN W.	43 45 18	3173	45 12 1	3184	46 38 29	3188	48 4 41	3211
	Pollux E.	54 59 9	2874	53 26 17	2893	51 53 48	2909	50 21 41	2927
	Regulus E.	91 33 59	2805	89 59 37	2818	88 25 33	2831	86 51 46	2845
3	SUN W.	55 11 48	3275	56 36 29	3287	58 0 56	3299	59 25 9	3310
	Venus W.	19 44 25	3060	21 13 24	3063	22 42 19	3067	24 11 9	3072
	Pollux E.	42 46 50	3091	41 17 3	3041	39 47 41	3061	38 18 44	3083
	Regulus E.	79 7 8	2909	77 35 1	2921	76 3 9	2933	74 31 32	2944
4	SUN W.	66 23 3	3362	67 46 3	3373	69 8 52	3381	70 31 30	3390
	Venus W.	31 33 39	3101	33 1 48	3107	34 29 49	3113	35 57 43	3118
	Pollux E.	31 1 1	3210	29 35 4	3243	28 9 45	3278	26 45 8	3318
	Regulus E.	66 56 55	2997	65 26 38	3006	63 56 33	3016	62 26 40	3025
	Spica E.	120 55 47	2981	119 25 10	2989	117 54 44	2997	116 24 28	3005
5	SUN W.	77 22 26	3425	78 44 14	3431	80 5 56	3436	81 27 32	3441
	Venus W.	43 15 46	3139	44 43 8	3143	46 10 25	3146	47 37 39	3148
	Aldebaran W.	25 24 20	3186	26 50 46	3177	28 17 23	3169	29 44 9	3163
	Regulus E.	54 59 48	3063	53 30 53	3069	52 2 6	3075	50 33 26	3081
	Spica E.	108 55 29	3039	107 26 5	3045	105 56 48	3050	104 27 37	3055
6	SUN W.	88 14 21	3457	89 35 33	3459	90 56 43	3460	92 17 52	3460
	Venus W.	54 53 15	3154	56 20 19	3153	57 47 24	3153	59 14 30	3152
	Aldebaran W.	36 59 30	3143	38 26 48	3139	39 54 10	3136	41 21 36	3133
	Regulus E.	43 11 45	3105	41 43 42	3109	40 15 43	3113	38 47 49	3117
	Spica E.	97 2 53	3069	95 34 6	3071	94 5 21	3073	92 36 38	3073
7	SUN W.	99 3 40	3455	100 24 54	3454	101 46 10	3451	103 7 29	3446
	Venus W.	66 30 31	3138	67 57 55	3133	69 25 24	3129	70 52 58	3125
	Aldebaran W.	48 39 45	3114	50 7 37	3110	51 35 34	3105	53 3 37	3101
	Regulus E.	31 29 24	3134	30 1 56	3138	28 34 33	3143	27 7 15	3148
	Spica E.	85 13 1	3069	83 44 13	3067	82 15 23	3064	80 46 29	3060
8	SUN W.	109 55 19	3422	111 17 11	3416	112 39 9	3409	114 1 15	3402
	Venus W.	78 12 29	3092	79 40 48	3085	81 9 16	3077	82 37 54	3068
	Aldebaran W.	60 25 29	3071	61 54 14	3064	63 23 8	3056	64 52 11	3049
	Pollux W.	20 5 52	3540	21 25 32	3471	22 46 28	3413	24 8 30	3363
	Spica E.	73 20 49	3038	71 51 23	3039	70 21 50	3026	68 52 9	3019
	Antares E.	118 50 23	3044	117 21 5	3038	115 51 39	3031	114 22 5	3025
9	SUN W.	120 53 58	3360	122 17 0	3351	123 40 13	3341	125 3 37	3332
	Venus W.	90 3 52	3090	91 33 40	3009	93 3 42	2997	94 33 58	2986
	Aldebaran W.	72 19 54	3006	73 49 59	2997	75 20 16	2986	76 50 46	2977
	Pollux W.	31 10 55	3188	32 37 18	3163	34 4 12	3138	35 31 35	3115
	Spica E.	61 21 30	2979	59 50 51	2970	58 20 1	2962	56 49 0	2953
	Antares E.	106 51 57	2984	105 21 24	2974	103 50 39	2965	102 19 43	2955
10	SUN W.	132 3 38	2976	133 28 17	2965	134 53 9	2953	136 18 15	2942
	Venus W.	102 8 57	2925	103 40 44	2919	105 12 47	2909	106 45 7	2895

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	37 55 44	3119	39 23 31	3131	40 51 3	3144	42 18 19	3158
	Pollux	E.	61 14 16	2807	59 39 57	2823	58 5 59	2840	56 32 23	2857
	Regulus	E.	97 54 30	2748	96 18 54	2763	94 43 37	2777	93 8 39	2791
2	Sun	W.	49 30 37	3294	50 56 18	3327	52 21 43	3350	53 46 53	3363
	Pollux	E.	48 49 56	2945	47 18 34	2964	45 47 36	2982	44 17 1	3001
	Regulus	E.	85 18 17	2859	83 45 5	2872	82 12 10	2884	80 39 31	2897
3	Sun	W.	60 49 9	3391	62 12 56	3392	63 36 30	3343	64 59 52	3352
	Venus	W.	25 39 53	3078	27 8 30	3083	28 37 0	3089	30 5 23	3095
	Pollux	E.	36 50 14	3105	35 22 11	3129	33 54 37	3154	32 27 33	3181
	Regulus	E.	73 0 9	2955	71 29 0	2966	69 58 5	2977	68 27 24	2987
4	Sun	W.	71 53 58	3398	73 16 17	3405	74 38 28	3412	76 0 31	3419
	Venus	W.	37 25 31	3123	38 53 13	3128	40 20 49	3132	41 48 20	3136
	Pollux	E.	25 21 17	3362	23 58 17	3413	22 36 15	3473	21 15 21	3545
	Regulus	E.	60 56 58	3033	59 27 26	3041	57 58 4	3049	56 28 52	3056
	Spica	E.	114 54 22	3014	113 24 26	3021	111 54 39	3027	110 25 0	3034
5	Sun	W.	82 49 2	3446	84 10 27	3449	85 31 48	3452	86 53 6	3454
	Venus	W.	49 4 50	3150	50 31 59	3152	51 59 6	3153	53 26 11	3154
	Aldebaran	W.	31 11 2	3158	32 38 1	3153	34 5 6	3149	35 32 16	3146
	Regulus	E.	49 4 53	3087	47 36 27	3091	46 8 7	3096	44 39 53	3101
	Spica	E.	102 58 32	3059	101 29 32	3062	100 0 36	3065	98 31 43	3067
6	Sun	W.	93 39 1	3461	95 0 9	3460	96 21 18	3459	97 42 26	3457
	Venus	W.	60 41 37	3150	62 8 46	3148	63 35 57	3145	65 3 12	3142
	Aldebaran	W.	42 49 5	3130	44 16 38	3126	45 44 16	3123	47 11 58	3119
	Regulus	E.	37 20 0	3120	35 52 15	3124	34 24 34	3127	32 56 57	3130
	Spica	E.	91 7 56	3073	89 39 14	3073	88 10 31	3072	86 41 47	3070
7	Sun	W.	104 28 53	3443	105 50 21	3438	107 11 54	3433	108 33 33	3427
	Venus	W.	72 20 37	3119	73 48 23	3113	75 16 17	3106	76 44 19	3100
	Aldebaran	W.	54 31 45	3096	56 0 0	3090	57 28 22	3083	58 56 52	3078
	Regulus	E.	25 40 4	3155	24 13 1	3163	22 46 8	3174	21 19 28	3188
	Spica	E.	79 17 31	3057	77 48 29	3053	76 19 22	3048	74 50 9	3043
8	Sun	W.	115 23 29	3394	116 45 52	3386	118 8 24	3378	119 31 6	3369
	Venus	W.	84 6 43	3059	85 35 43	3050	87 4 54	3040	88 34 17	3030
	Aldebaran	W.	66 21 23	3041	67 50 45	3033	69 20 17	3024	70 50 0	3015
	Pollux	W.	25 31 20	3319	26 55 19	3281	28 19 53	3247	29 45 6	3217
	Spica	E.	67 22 20	3012	65 52 22	3005	64 22 15	2997	62 51 58	2988
	Antares	E.	112 52 23	3017	111 22 31	3009	109 52 30	3001	108 22 19	2993
9	Sun	W.	126 27 12	3321	127 50 59	3310	129 14 59	3299	130 39 12	3288
	Venus	W.	96 4 28	2975	97 35 12	2963	99 6 11	2950	100 37 26	2938
	Aldebaran	W.	78 21 28	2968	79 52 23	2955	81 23 32	2945	82 54 54	2933
	Pollux	W.	36 59 26	3094	38 27 43	3074	39 56 24	3054	41 25 30	3034
	Spica	E.	55 17 48	2942	53 46 23	2932	52 14 45	2921	50 42 53	2910
	Antares	E.	100 48 34	2945	99 17 12	2935	97 45 37	2924	96 13 49	2913
10	Sun	W.	137 43 34	3231	139 9 7	3218	140 34 55	3206	142 0 57	3195
	Venus	W.	108 17 45	2872	109 50 40	2859	111 23 52	2845	112 57 22	2831

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	III ^h .	P. L. of Dist.	VI ^h .	P. L. of Dist.	IX ^h .	P. L. of Dist.
10	Aldebaran W.	84 26 31	2922	85 58 22	2911	87 30 27	2899	89 2 47	2887
	Pollux W.	42 55 0	2916	44 24 53	2908	45 55 8	2901	47 25 45	2894
	Spica E.	49 10 47	2900	47 38 28	2889	46 5 55	2877	44 33 7	2866
	Antares E.	94 41 47	2908	93 9 31	2901	91 37 0	2879	90 4 14	2867
11	Aldebaran W.	96 48 22	2925	98 22 17	2913	99 56 28	2900	101 30 56	2788
	Pollux W.	55 4 6	2922	56 36 48	2908	58 9 51	2850	59 43 14	2835
	Regulus W.	18 8 25	2973	19 39 11	2935	21 10 46	2901	22 43 3	2873
	Spica E.	36 45 23	2907	35 11 4	2795	33 36 29	2788	32 1 38	2771
	Antares E.	82 16 30	2905	80 42 9	2792	79 7 31	2779	77 32 36	2767
12	Aldebaran W.	109 27 26	2794	111 3 34	2711	112 39 59	2699	114 16 40	2687
	Pollux W.	67 35 7	2760	69 10 28	2744	70 46 9	2730	72 22 9	2716
	Regulus W.	30 32 49	2759	32 8 11	2740	33 43 58	2722	35 20 9	2704
	Antares E.	69 33 47	2701	67 57 9	2689	66 20 14	2675	64 43 1	2663
	α Aquilæ E.	120 4 10	3294	118 40 26	3291	117 16 4	3259	115 51 5	3230
13	Pollux W.	80 26 49	2947	82 4 40	2935	83 42 48	2922	85 21 13	2909
	Regulus W.	43 26 40	2925	45 5 1	2910	46 43 42	2896	48 22 43	2883
	Antares E.	56 32 40	2900	54 53 45	2888	53 14 34	2877	51 35 7	2864
	α Aquilæ E.	108 38 1	3104	107 9 56	3092	105 41 24	3061	104 12 27	3041
14	Pollux W.	93 37 29	2951	95 17 31	2940	96 57 48	2930	98 38 20	2920
	Regulus W.	56 42 22	2917	58 23 11	2906	60 4 16	2894	61 45 37	2883
	Antares E.	43 13 55	2910	41 32 56	2901	39 51 44	2899	38 10 19	2883
	α Aquilæ E.	96 42 1	2959	95 10 57	2945	93 39 35	2932	92 7 57	2921
	Fomalhaut E.	122 38 36	3164	121 11 44	3130	119 44 11	3098	118 15 59	3068
15	Pollux W.	107 4 14	2976	108 46 1	2969	110 27 58	2962	112 10 5	2955
	Regulus W.	70 16 11	2939	71 59 0	2922	73 42 3	2914	75 25 18	2905
	Spica W.	16 13 52	2951	17 56 14	2936	19 38 58	2922	21 22 2	2910
	Antares E.	29 40 24	2948	27 57 57	2943	26 15 24	2940	24 32 46	2938
	α Aquilæ E.	84 26 34	2978	82 53 47	2973	81 20 53	2969	79 47 54	2966
	Fomalhaut E.	110 46 27	2944	109 15 4	2934	107 43 16	2905	106 11 4	2889
	Mars E.	120 42 48	2999	119 6 7	2988	117 29 11	2978	115 52 1	2968
16	Regulus W.	84 4 26	2968	85 48 47	2962	87 33 17	2955	89 17 56	2950
	Spica W.	30 1 13	2962	31 45 42	2955	33 30 21	2948	35 15 11	2942
	α Aquilæ E.	72 2 30	2969	70 29 31	2974	68 56 39	2980	67 23 55	2989
	Fomalhaut E.	98 25 12	2992	96 51 13	2913	95 17 2	2904	93 42 39	2797
	Mars E.	107 43 11	2926	106 4 52	2919	104 26 23	2912	102 47 45	2907
	α Pegasi E.	118 37 0	2926	116 56 23	2915	115 15 30	2903	113 34 21	2893
17	Regulus W.	98 3 5	2926	99 48 26	2922	101 33 53	2920	103 19 24	2916
	Spica W.	44 1 32	2915	45 47 10	2910	47 32 55	2906	49 18 46	2902
	α Aquilæ E.	59 43 43	2960	58 12 40	2981	56 42 4	3006	55 11 59	3034
	Fomalhaut E.	85 48 47	2775	84 13 46	2774	82 38 44	2775	81 3 43	2776
	Mars E.	94 32 37	2980	92 53 15	2976	91 13 47	2972	89 34 13	2968
	α Pegasi E.	105 5 24	2953	103 23 5	2947	101 40 37	2941	99 58 1	2937
	Sun E.	141 21 2	2948	139 43 12	2941	138 5 13	2935	136 27 6	2930
18	Regulus W.	112 8 0	2905	113 53 52	2904	115 39 45	2904	117 25 39	2903
	Spica W.	58 9 11	2909	59 55 27	2927	61 41 46	2925	63 28 7	2923

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXh.	P. L. of Diff.
10	Aldebaran W.	90° 35' 23"	2875	92° 8' 14"	2888	93° 41' 21"	2850	95° 14' 44"	2838
	Pollux W.	48 56 43	2946	50 28 3	2930	51 59 44	2914	53 31 45	2898
	Spica E.	43 0 5	2855	41 26 48	2849	39 53 15	2831	38 19 27	2818
	Antares E.	88 31 13	2855	86 57 56	2843	85 24 24	2830	83 50 35	2818
11	Aldebaran W.	103 5 40	2775	104 40 41	2762	106 15 59	2749	107 51 34	2736
	Pollux W.	61 16 57	2819	62 51 0	2804	64 25 23	2789	66 0 5	2774
	Regulus W.	24 15 57	2846	25 49 25	2831	27 23 25	2799	28 57 54	2779
	Spica E.	30 26 32	2759	28 51 10	2747	27 15 32	2735	25 39 39	2725
	Antares E.	75 57 25	2754	74 21 57	2741	72 46 11	2738	71 10 8	2714
12	Aldebaran W.	115 53 38	2674	117 30 53	2669	119 8 24	2651	120 46 10	2640
	Pollux W.	73 58 28	2701	75 35 6	2688	77 12 2	2675	78 49 16	2660
	Regulus W.	36 56 43	2687	38 33 40	2671	40 10 59	2655	41 48 39	2640
	Antares E.	63 5 31	2650	61 27 44	2638	59 49 40	2625	58 11 19	2613
	α Aquilæ E.	114 25 31	2609	112 59 24	2576	111 32 46	2551	110 5 38	2527
13	Pollux W.	86 59 56	2587	88 38 55	2585	90 18 11	2574	91 57 42	2569
	Regulus W.	50 2 2	2569	51 41 40	2556	53 21 36	2543	55 1 50	2530
	Antares E.	49 55 23	2553	48 15 24	2542	46 35 9	2531	44 54 39	2521
	α Aquilæ E.	102 43 5	2092	101 13 20	2065	99 43 14	2069	98 12 47	2073
14	Pollux W.	100 19 5	2511	102 0 3	2509	103 41 14	2499	105 22 38	2484
	Regulus W.	63 27 14	2479	65 9 7	2469	66 51 14	2451	68 33 36	2449
	Antares E.	36 28 42	2475	34 46 53	2467	33 4 53	2460	31 22 43	2453
	α Aquilæ E.	90 36 5	2910	89 3 59	2901	87 31 41	2892	85 50 12	2885
	Fomalhaut E.	116 47 10	2039	115 17 46	2014	113 47 50	2009	112 17 23	2005
15	Pollux W.	113 52 21	2449	115 34 46	2444	117 17 18	2439	118 59 57	2434
	Regulus W.	77 8 45	2397	78 52 24	2389	80 36 14	2389	82 20 15	2375
	Spica W.	23 5 23	2398	24 49 0	2389	26 32 51	2379	28 16 56	2371
	Antares E.	22 50 5	2438	21 7 24	2441	19 24 47	2448	17 42 20	2458
	α Aquilæ E.	78 14 51	2884	76 41 46	2863	75 8 40	2863	73 35 34	2865
	Fomalhaut E.	104 38 31	2673	103 5 38	2659	101 32 26	2645	99 58 57	2633
	Mars E.	114 14 38	2659	112 37 3	2651	110 59 17	2649	109 21 19	2635
16	Regulus W.	91 2 43	2344	92 47 38	2339	94 32 40	2335	96 17 49	2330
	Spica W.	37 0 10	2335	38 45 18	2339	40 30 35	2334	42 16 0	2319
	α Aquilæ E.	65 51 22	2899	64 19 2	2911	62 46 57	2895	61 15 10	2941
	Fomalhaut E.	92 8 7	2791	90 33 27	2785	88 58 39	2780	87 23 45	2777
	Mars E.	101 8 59	2600	99 30 4	2595	97 51 2	2590	96 11 53	2585
	α Pegasi E.	111 52 58	2483	110 11 21	2475	108 29 32	2467	106 47 33	2460
17	Regulus W.	105 5 0	2313	106 50 40	2311	108 36 24	2309	110 22 11	2307
	Spica W.	51 4 42	2299	52 50 43	2296	54 36 48	2293	56 22 58	2291
	α Aquilæ E.	53 42 28	2065	52 13 36	2101	50 45 27	2140	49 18 6	2184
	Fomalhaut E.	79 28 44	2779	77 53 48	2782	76 18 56	2787	74 44 11	2794
	Mars E.	87 54 34	2565	86 14 51	2563	84 35 5	2560	82 55 15	2558
	α Pegasi E.	98 15 19	2432	96 32 30	2429	94 49 36	2425	93 6 37	2422
	Sun E.	134 48 52	2696	133 10 32	2691	131 32 6	2618	129 53 35	2615
18	Regulus W.	119 11 34	2303	120 57 29	2303	122 43 24	2303	124 29 19	2304
	Spica W.	65 14 31	2282	67 0 57	2281	68 47 24	2281	70 33 52	2281

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
18	Antares W.	13 3 3	9433	14 45 50	9400	16 29 25	9376	18 13 34	9356
	α Aquilæ E.	47 51 38	3235	46 26 10	3291	45 1 48	3354	43 38 39	3485
	Fomalhaut E.	73 9 35	2801	71 35 9	2810	70 0 54	2821	68 26 53	2833
	Mars E.	81 15 22	2556	79 35 27	2554	77 55 29	2553	76 15 30	2552
	α Pegasi E.	91 23 34	2420	89 40 28	2419	87 57 20	2417	86 14 10	2417
	SUN E.	128 15 0	2612	126 36 21	2609	124 57 38	2606	123 18 51	2604
19	Spica W.	72 20 20	2280	74 6 49	2280	75 53 18	2280	77 39 47	2280
	Antares W.	26 59 4	2314	28 44 43	2310	30 30 28	2307	32 16 17	2305
	Fomalhaut E.	60 41 30	2922	59 9 39	2946	57 38 18	2973	56 7 32	3003
	Mars E.	67 55 22	2553	66 15 22	2553	64 35 23	2554	62 55 25	2556
	α Pegasi E.	77 38 17	2420	75 55 11	2422	74 12 8	2425	72 29 9	2429
	SUN E.	115 4 23	2598	113 25 25	2598	111 46 27	2597	110 7 28	2597
20	Spica W.	86 32 0	2285	88 18 22	2285	90 4 43	2287	91 51 2	2289
	Antares W.	41 6 1	2300	42 52 1	2300	44 38 1	2300	46 24 1	2301
	Fomalhaut E.	48 44 27	2912	47 18 32	2968	45 53 43	3331	44 30 7	3401
	Mars E.	54 36 14	2568	52 56 35	2571	51 17 0	2574	49 37 30	2579
	α Pegasi E.	63 55 40	2454	62 13 22	2460	60 31 13	2468	58 49 15	2477
	SUN E.	101 52 41	2601	100 13 47	2601	98 34 54	2603	96 56 3	2605
21	Spica W.	100 41 54	2299	102 27 55	2301	104 13 53	2304	105 59 47	2306
	Antares W.	55 13 37	2307	56 59 26	2309	58 45 12	2311	60 30 55	2313
	Fomalhaut E.	37 55 15	2909	36 42 4	4054	35 31 18	4221	34 23 12	4411
	Mars E.	41 21 39	2607	39 42 53	2614	38 4 17	2623	36 25 53	2632
	α Pegasi E.	50 22 55	2535	48 42 31	2551	47 2 29	2569	45 22 52	2569
	SUN E.	88 42 26	2615	87 3 52	2618	85 25 21	2620	83 46 53	2622
22	Spica W.	114 48 16	2322	116 33 44	2325	118 19 7	2328	120 4 25	2333
	Antares W.	69 18 38	2327	71 3 58	2330	72 49 14	2333	74 34 25	2337
	α Aquilæ W.	29 36 11	5422	30 27 50	5094	31 23 32	4816	32 22 55	4580
	α Pegasi E.	37 12 34	2729	35 36 31	2769	34 1 22	2815	32 27 14	2989
	SUN E.	75 35 32	2639	73 57 30	2642	72 19 32	2646	70 41 30	2650
23	Antares W.	83 19 2	2355	85 3 41	2360	86 48 13	2364	88 32 39	2369
	α Aquilæ W.	38 3 45	3798	39 18 49	3896	40 35 40	3808	41 54 6	3522
	SUN E.	62 33 39	2672	60 56 21	2677	59 19 10	2682	57 42 6	2687
24	Antares W.	97 13 5	2394	98 56 48	2400	100 40 23	2406	102 23 49	2412
	α Aquilæ W.	48 45 1	3254	50 10 6	3217	51 35 55	3183	53 2 24	3154
	SUN E.	49 38 34	2716	48 2 16	2732	46 26 7	2729	44 50 6	2736
25	Antares W.	110 58 49	2445	112 41 20	2452	114 23 41	2459	116 5 52	2467
	α Aquilæ W.	60 22 20	3054	61 51 26	3041	63 20 48	3030	64 50 23	3022
	SUN E.	36 52 30	2777	35 17 32	2785	33 42 45	2795	32 8 11	2805
29	SUN W.	12 56 15	2920	14 22 1	2907	15 48 2	2900	17 14 11	2898
	Pollux E.	59 30 49	2821	57 56 49	2835	56 23 7	2850	54 49 44	2865
	Regulus E.	96 9 8	2758	94 33 45	2769	92 58 37	2781	91 23 44	2792
30	SUN W.	24 24 32	2921	25 50 16	2929	27 15 51	2936	28 41 17	2945
	Pollux E.	47 7 43	2945	45 36 21	2962	44 5 21	2960	42 34 43	2968
	Regulus E.	83 32 58	2848	81 59 33	2859	80 26 22	2871	78 58 26	2881

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
18	Antares W.	19 58 9	9345	21 43 9	9335	23 28 12	9396	25 13 33	9390
	α Aquilæ E.	42 16 51	9506	40 56 34	9508	39 37 57	9709	38 21 12	9690
	Fomalhaut E.	66 53 8	9847	65 19 41	9869	63 46 34	9980	62 13 49	9900
	Mars E.	74 35 29	9551	72 55 27	9551	71 15 25	9551	69 35 23	9552
	α Pegasi E.	84 30 59	9416	82 47 47	9417	81 4 36	9417	79 21 26	9418
	SUN E.	121 40 1	9602	120 1 9	9601	118 22 15	9600	116 43 20	9599
19	Spica W.	79 26 16	9981	81 12 44	9981	82 59 11	9983	84 45 36	9983
	Antares W.	34 2 9	9309	35 48 4	9301	37 34 2	9300	39 20 1	9300
	Fomalhaut E.	54 37 23	9037	53 7 56	9073	51 39 14	9115	50 11 23	9161
	Mars E.	61 15 29	9557	59 35 35	9559	57 55 44	9568	56 15 57	9565
	α Pegasi E.	70 46 15	9439	69 3 26	9436	67 20 43	9441	65 38 7	9446
	SUN E.	108 28 29	9598	106 49 31	9598	105 10 33	9599	103 31 36	9600
20	Spica W.	93 37 18	9991	95 23 31	9992	97 9 42	9994	98 55 50	9997
	Antares W.	48 9 59	9309	49 55 56	9309	51 41 52	9304	53 27 46	9306
	Fomalhaut E.	43 7 52	9480	41 47 6	9509	40 27 58	9609	39 10 37	9781
	Mars E.	47 58 6	9583	46 18 48	9588	44 39 37	9594	43 0 34	9600
	α Pegasi E.	57 7 29	9487	55 25 57	9497	53 44 40	9509	52 3 39	9521
	SUN E.	95 17 15	9607	93 38 29	9608	91 59 45	9610	90 21 4	9612
21	Spica W.	107 45 38	9309	109 31 25	9319	111 17 7	9315	113 2 44	9319
	Antares W.	62 16 35	9316	64 2 11	9318	65 47 44	9391	67 33 13	9394
	Fomalhaut E.	33 18 1	9631	32 16 3	9685	31 17 36	9181	30 23 0	9530
	Mars E.	34 47 41	9649	33 9 43	9653	31 32 0	9666	29 54 35	9689
	α Pegasi E.	43 43 42	9610	42 5 1	9635	40 26 53	9663	38 49 23	9693
	SUN E.	82 8 28	9695	80 30 7	9699	78 51 51	9639	77 13 39	9635
22	Spica W.	121 49 37	9336	123 34 44	9340	125 19 45	9344	127 4 40	9349
	Antares W.	76 19 31	9340	78 4 32	9344	79 49 28	9348	81 34 18	9359
	α Aquilæ W.	33 25 37	9376	34 31 20	9400	35 39 46	9407	36 50 39	9914
	α Pegasi E.	30 54 15	9901	29 22 35	9903	27 52 26	9900	26 24 4	9193
	SUN E.	69 3 52	9655	67 26 11	9658	65 48 35	9662	64 11 4	9666
23	Antares W.	90 16 58	9374	92 1 10	9378	93 45 16	9384	95 29 14	9389
	α Aquilæ W.	43 13 58	9460	44 35 7	9399	45 57 25	9345	47 20 45	9396
	SUN E.	56 5 8	9699	54 28 17	9698	52 51 34	9704	51 15 0	9710
24	Antares W.	104 7 7	9418	105 50 16	9494	107 33 17	9431	109 16 8	9438
	α Aquilæ W.	54 29 28	9199	55 57 3	9106	57 25 5	9086	58 53 32	9089
	SUN E.	43 14 14	9744	41 38 32	9752	40 3 1	9760	38 27 40	9768
25	Antares W.	117 47 52	9475	119 29 41	9482	121 11 19	9491	122 52 45	9499
	α Aquilæ W.	66 20 9	9014	67 50 4	9009	69 20 6	9005	70 50 13	9003
	SUN E.	30 33 50	9816	28 59 43	9828	27 25 51	9840	25 52 15	9852
29	SUN W.	18 40 23	9199	20 6 33	9203	21 32 39	9208	22 58 39	9214
	Pollux E.	53 16 40	9980	51 43 55	9995	50 11 30	9912	48 39 26	9998
	Regulus E.	89 49 5	9803	88 14 41	9815	86 40 32	9896	85 6 38	9837
30	SUN W.	30 6 33	9254	31 31 38	9264	32 56 32	9273	34 21 15	9289
	Pollux E.	41 4 28	9018	39 34 37	9039	38 5 12	9060	36 36 13	9062
	Regulus E.	77 20 43	9892	75 48 14	9903	74 15 59	9914	72 43 58	9994

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hour.	
		Apparent Right Ascension.		Diff. for 1 hour.	Apparent Declination.		Diff. for 1 hour.				Semi-diameter.
		^h ^m ^s			[°] ['] ["]						
Sun.	1	2 35 8.45	9.552	N.15 12' 14".8	+45".12	15 54".12	66.09	3 3.38	0.303		
Mon.	2	2 38 57.99	9.575	15 30 10.2	44.49	15 53.89	66.17	3 10.38	0.290		
Tues.	3	2 42 48.07	9.597	15 47 50.2	43.84	15 53.66	66.25	3 16.85	0.258		
Wed.	4	2 46 38.69	9.620	16 5 14.4	43.17	15 53.44	66.33	3 22.77	0.235		
Thur.	5	2 50 29.85	9.642	16 22 22.5	42.51	15 53.21	66.41	3 28.15	0.213		
Frid.	6	2 54 21.55	9.665	16 39 14.3	41.82	15 53.00	66.49	3 32.99	0.190		
Sat.	7	2 58 13.79	9.689	16 55 49.5	41.12	15 52.78	66.57	3 37.29	0.167		
Sun.	8	3 2 6.59	9.712	17 12 7.7	40.40	15 52.57	66.66	3 41.04	0.144		
Mon.	9	3 5 59.95	9.735	17 28 8.8	39.68	15 52.36	66.74	3 44.22	0.121		
Tues.	10	3 9 53.87	9.759	17 43 52.3	38.94	15 52.15	66.82	3 46.84	0.097		
Wed.	11	3 13 48.36	9.782	17 59 18.0	38.19	15 51.94	66.90	3 48.90	0.074		
Thur.	12	3 17 43.42	9.806	18 14 25.8	37.43	15 51.74	66.99	3 50.40	0.050		
Frid.	13	3 21 39.05	9.830	18 29 15.1	36.66	15 51.54	67.07	3 51.33	0.026		
Sat.	14	3 25 35.25	9.854	18 43 45.9	35.89	15 51.34	67.15	3 51.68	0.002		
Sun.	15	3 29 32.03	9.878	18 57 57.7	35.10	15 51.14	67.23	3 51.46	0.022		
Mon.	16	3 33 29.38	9.902	19 11 50.5	34.29	15 50.94	67.31	3 50.66	0.046		
Tues.	17	3 37 27.31	9.926	19 25 23.7	33.48	15 50.75	67.39	3 49.29	0.070		
Wed.	18	3 41 25.82	9.950	19 38 37.3	32.65	15 50.56	67.47	3 47.35	0.094		
Thur.	19	3 45 24.90	9.974	19 51 31.0	31.81	15 50.37	67.55	3 44.83	0.115		
Frid.	20	3 49 24.56	9.997	20 4 4.5	30.96	15 50.18	67.63	3 41.74	0.141		
Sat.	21	3 53 24.78	10.020	20 16 17.5	30.10	15 50.00	67.72	3 38.09	0.164		
Sun.	22	3 57 25.54	10.044	20 28 9.8	29.24	15 49.82	67.79	3 33.89	0.187		
Mon.	23	4 1 26.84	10.067	20 39 41.0	28.35	15 49.64	67.86	3 29.15	0.210		
Tues.	24	4 5 28.68	10.088	20 50 51.0	27.46	15 49.46	67.93	3 23.88	0.232		
Wed.	25	4 9 31.05	10.109	21 1 39.5	26.56	15 49.30	68.00	3 18.08	0.253		
Thur.	26	4 13 33.94	10.130	21 12 6.1	25.66	15 49.14	68.07	3 11.77	0.274		
Frid.	27	4 17 37.32	10.151	21 22 10.8	24.74	15 48.99	68.14	3 4.98	0.294		
Sat.	28	4 21 41.16	10.170	21 31 53.5	23.81	15 48.83	68.20	2 57.71	0.313		
Sun.	29	4 25 45.45	10.188	21 41 13.8	22.87	15 48.69	68.26	2 49.99	0.331		
Mon.	30	4 29 50.19	10.206	21 50 11.6	21.92	15 48.55	68.32	2 41.84	0.349		
Tues.	31	4 33 55.34	10.223	21 58 46.5	20.97	15 48.41	68.38	2 33.27	0.366		
Wed.	32	4 38 0.89	10.240	N.22 6 58.6	+20.02	15 48.28	68.44	2 24.30	0.383		

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sidereal Time.

+ prefixed to the hourly change of declination indicates that the north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S								Equation of Time, to be added to Mean Time.	Diff. for 1 hour.	Sidereal Time, or Right Ascension of Mean Sun.			
		Apparent Right Ascension.		Diff. for 1 hour.	Apparent Declination.		Diff. for 1 hour.								
		h	m	s	s	°	'	''	''						
Sun.	1	2	35	8.94	9.553	N.15	12	17.2	+45.12	3	3.40	0.303	2	38	12.35
Mon.	2	2	38	58.50	9.576	15	30	12.6	44.49	3	10.40	0.280	2	42	8.90
Tues.	3	2	42	48.60	9.598	15	47	52.6	43.84	3	16.86	0.258	2	46	5.46
Wed.	4	2	46	39.23	9.621	16	5	16.8	43.17	3	22.78	0.235	2	50	2.01
Thur.	5	2	50	30.40	9.643	16	22	25.0	42.51	3	28.16	0.213	2	53	58.57
Frid.	6	2	54	22.12	9.666	16	39	16.8	41.82	3	33.00	0.190	2	57	55.12
Sat.	7	2	58	14.38	9.689	16	55	52.0	41.12	3	37.30	0.167	3	1	51.68
Sun.	8	3	2	7.19	9.712	17	12	10.2	40.40	3	41.04	0.144	3	5	48.23
Mon.	9	3	6	0.56	9.735	17	28	11.3	39.68	3	44.23	0.121	3	9	44.79
Tues.	10	3	9	54.49	9.759	17	43	54.8	38.94	3	46.85	0.097	3	13	41.34
Wed.	11	3	13	48.99	9.782	17	59	20.5	38.19	3	48.91	0.074	3	17	37.90
Thur.	12	3	17	44.05	9.806	18	14	28.2	37.43	3	50.41	0.050	3	21	34.45
Frid.	13	3	21	39.68	9.830	18	29	17.5	36.66	3	51.33	0.026	3	25	31.01
Sat.	14	3	25	35.88	9.854	18	43	48.2	35.89	3	51.68	0.002	3	29	27.56
Sun.	15	3	29	32.66	9.878	18	58	0.0	35.10	3	51.46	0.022	3	33	24.12
Mon.	16	3	33	30.01	9.902	19	11	52.7	34.29	3	50.66	0.046	3	37	20.67
Tues.	17	3	37	27.94	9.926	19	25	25.9	33.48	3	49.29	0.070	3	41	17.23
Wed.	18	3	41	26.44	9.950	19	38	39.4	32.65	3	47.35	0.094	3	45	13.79
Thur.	19	3	45	25.52	9.974	19	51	33.0	31.81	3	44.83	0.118	3	49	10.35
Frid.	20	3	49	25.17	9.997	20	4	6.4	30.96	3	41.73	0.141	3	53	6.90
Sat.	21	3	53	25.38	10.020	20	16	19.3	30.10	3	38.08	0.164	3	57	3.46
Sun.	22	3	57	26.13	10.043	20	28	11.5	29.24	3	33.88	0.187	4	1	0.01
Mon.	23	4	1	27.42	10.066	20	39	42.6	28.35	3	29.14	0.210	4	4	56.57
Tues.	24	4	5	29.25	10.088	20	50	52.5	27.46	3	23.87	0.232	4	8	53.12
Wed.	25	4	9	31.61	10.109	21	1	40.9	26.56	3	18.07	0.253	4	12	49.68
Thur.	26	4	13	34.48	10.130	21	12	7.4	25.66	3	11.76	0.274	4	16	46.24
Frid.	27	4	17	37.84	10.150	21	22	12.1	24.74	3	4.96	0.294	4	20	42.80
Sat.	28	4	21	41.66	10.169	21	31	54.7	23.81	2	57.69	0.313	4	24	39.35
Sun.	29	4	25	45.93	10.187	21	41	14.9	22.87	2	49.97	0.331	4	28	35.91
Mon.	30	4	29	50.65	10.205	21	50	12.6	21.92	2	41.82	0.349	4	32	32.47
Tues.	31	4	33	55.78	10.222	21	58	47.5	20.97	2	33.25	0.366	4	36	29.03
Wed.	32	4	38	1.31	10.239	N.22	6	59.4	+20.02	2	24.28	0.383	4	40	25.58

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

+ prefixed to the hourly change of declination indicates that the north declinations are increasing.

Diff. for 1 hour,
+ 9.8565.
(Table III.)

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0 ^h .	
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE				
		λ	λ'						
1	121	41° 13' 30.2	12° 57.7	145.47	−0.25	.00035733	+43.9	21 18 17.66	
2	122	42 11 40.5	11 7.9	145.39	0.39	.0036781	43.3	21 14 21.75	
3	123	43 9 48.9	9 16.2	145.31	0.52	.0037814	42.7	21 10 25.85	
4	124	44 7 55.4	7 22.5	145.23	0.65	.0038832	42.1	21 6 29.94	
5	125	45 6 0.0	5 26.9	145.15	0.74	.0039837	41.4	21 2 34.03	
6	126	46 4 2.6	3 29.4	145.07	0.83	.0040829	41.0	20 58 38.12	
7	127	47 2 3.3	1 30.0	144.99	0.90	.0041809	40.5	20 54 42.21	
8	128	47 60 2.1	59 28.7	144.91	0.92	.0042778	40.1	20 50 46.30	
9	129	48 57 59.1	57 25.5	144.83	0.92	.0043737	39.7	20 46 50.39	
10	130	49 55 54.3	55 20.5	144.76	0.89	.0044687	39.4	20 42 54.48	
11	131	50 53 47.7	53 13.8	144.69	0.83	.0045629	39.0	20 38 58.57	
12	132	51 51 39.5	51 5.5	144.63	0.75	.0046562	38.7	20 35 2.66	
13	133	52 49 29.8	48 55.7	144.57	0.63	.0047488	38.3	20 31 6.75	
14	134	53 47 18.7	46 44.4	144.51	0.50	.0048406	38.0	20 27 10.84	
15	135	54 45 6.2	44 31.7	144.45	0.37	.0049314	37.6	20 23 14.93	
16	136	55 42 52.4	42 17.8	144.40	0.24	.0050214	37.3	20 19 19.02	
17	137	56 40 37.3	40 2.6	144.35	−0.11	.0051104	36.9	20 15 23.11	
18	138	57 38 21.1	37 46.2	144.30	0.00	.0051983	36.4	20 11 27.20	
19	139	58 36 3.8	35 28.7	144.25	+0.09	.0052850	35.8	20 7 31.29	
20	140	59 33 45.4	33 10.1	144.21	0.15	.0053703	35.2	20 3 35.38	
21	141	60 31 25.9	30 50.5	144.17	0.19	.0054541	34.5	19 59 39.47	
22	142	61 29 5.5	28 30.0	144.13	0.20	.0055362	33.8	19 55 43.56	
23	143	62 26 44.1	26 8.4	144.08	0.17	.0056165	33.0	19 51 47.65	
24	144	63 24 21.7	23 45.8	144.04	0.12	.0056948	32.1	19 47 51.74	
25	145	64 21 58.3	21 22.2	144.00	+0.05	.0057710	31.2	19 43 55.83	
26	146	65 19 33.9	18 57.7	143.96	−0.06	.0058451	30.3	19 39 59.92	
27	147	66 17 8.4	16 32.1	143.91	0.19	.0059169	29.4	19 36 4.01	
28	148	67 14 41.8	14 5.3	143.87	0.32	.0059864	28.5	19 32 8.10	
29	149	68 12 14.1	11 37.4	143.82	0.45	.0060536	27.5	19 28 12.19	
30	150	69 9 45.3	9 8.5	143.78	0.58	.0061184	26.5	19 24 16.28	
31	151	70 7 15.5	6 38.5	143.73	0.71	.0061810	25.5	19 20 20.36	
32	152	71 4 44.5	4 7.4	143.68	−0.83	.0062413	+24.6	19 16 24.44	
NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0 ^h .0.								Diff. for 1 hour, − 9 ^s .8296. (Table II.)	

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	THE MOON'S								
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
1	15 2.1	14 58.6	55 4.0	-1.13	54 51.0	-1.01	^h 2 ^m 30.3	2.13	^d 3.1
2	14 55.5	14 52.9	54 39.6	0.87	54 30.1	0.71	3 20.7	2.07	4.1
3	14 50.8	14 49.3	54 22.5	0.54	54 17.0	-0.36	4 9.4	1.98	5.1
4	14 48.4	14 48.2	54 13.8	-0.16	54 13.1	+0.05	4 56.1	1.90	6.1
5	14 48.8	14 50.0	54 15.0	+0.26	54 19.4	0.47	5 40.9	1.83	7.1
6	14 51.8	14 54.4	54 26.3	0.69	54 35.9	0.90	6 24.2	1.78	8.1
7	14 57.7	15 1.6	54 47.9	1.10	55 2.3	1.29	7 6.8	1.77	9.1
8	15 6.2	15 11.2	55 18.9	1.47	55 37.6	1.64	7 49.5	1.80	10.1
9	15 16.8	15 22.8	55 58.1	1.77	56 20.1	1.88	8 33.3	1.86	11.1
10	15 29.1	15 35.6	56 43.1	1.95	57 6.9	1.99	9 19.1	1.97	12.1
11	15 42.1	15 48.6	57 30.9	1.99	57 54.7	1.95	10 8.0	2.12	13.1
12	15 54.8	16 0.8	58 17.7	1.87	58 39.5	1.74	11 0.7	2.29	14.1
13	16 6.2	16 11.1	58 59.5	1.57	59 17.3	1.38	11 57.4	2.44	15.1
14	16 15.3	16 18.7	59 32.7	1.16	59 45.2	0.91	12 57.5	2.56	16.1
15	16 21.2	16 23.0	59 54.7	0.65	60 1.0	+0.39	13 59.2	2.58	17.1
16	16 23.8	16 23.8	60 4.1	+0.13	60 4.1	-0.12	15 0.5	2.51	18.1
17	16 23.0	16 21.6	60 1.3	-0.34	59 55.9	0.54	15 59.5	2.39	19.1
18	16 19.5	16 16.8	59 48.2	0.73	59 38.4	0.89	16 55.1	2.24	20.1
19	16 13.7	16 10.2	59 26.9	1.02	59 14.0	1.12	17 47.5	2.12	21.1
20	16 6.4	16 2.4	59 0.1	1.19	58 45.5	1.25	18 37.4	2.03	22.1
21	15 58.3	15 54.0	58 30.3	1.28	58 14.8	1.30	19 25.7	1.99	23.1
22	15 49.8	15 45.5	57 59.1	1.32	57 43.3	1.31	20 13.3	1.99	24.1
23	15 41.2	15 36.9	57 27.6	1.31	57 11.9	1.30	21 1.2	2.02	25.1
24	15 32.7	15 28.5	56 56.4	1.28	56 41.0	1.27	21 50.1	2.06	26.1
25	15 24.4	15 20.3	56 25.9	1.25	56 11.0	1.22	22 40.2	2.11	27.1
26	15 16.4	15 12.6	55 56.5	1.19	55 42.4	1.16	23 31.2	2.14	28.1
27	15 8.8	15 5.2	55 28.7	1.12	55 15.5	1.07	♄		29.1
28	15 1.9	14 58.7	55 3.1	1.00	54 51.5	0.92	0 22.6	2.14	0.5
29	14 55.8	14 53.2	54 40.9	0.84	54 31.3	0.75	1 13.5	2.09	1.5
30	14 50.9	14 49.0	54 22.9	0.63	54 16.0	0.50	2 2.9	2.02	2.5
31	14 47.6	14 46.7	54 10.8	0.35	54 7.4	0.20	2 50.4	1.93	3.5
32	14 46.3	14 46.4	54 5.9	-0.03	54 6.5	+0.15	3 35.9	1.85	4.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 1.					TUESDAY 3.				
0	5 3 21.63	2.9224	N.22° 57' 39.9"	0.212	0	6 47 26.66	2.1005	N.21° 0' 12.0"	4.928
1	5 5 34.99	2.9218	22 57 49.1	+0.095	1	6 49 32.59	2.0973	20 55 13.5	5.093
2	5 7 48.25	2.9202	22 57 51.3	-0.021	2	6 51 38.33	2.0941	20 50 9.3	5.117
3	5 10 1.41	2.9184	22 57 46.6	0.137	3	6 53 43.88	2.0909	20 44 59.5	5.309
4	5 12 14.46	2.9167	22 57 34.9	0.252	4	6 55 49.24	2.0877	20 39 44.2	5.302
5	5 14 27.41	2.9149	22 57 16.3	0.368	5	6 57 54.40	2.0844	20 34 23.3	5.394
6	5 16 40.25	2.9130	22 56 50.7	0.484	6	6 59 59.37	2.0812	20 28 56.9	5.486
7	5 18 52.97	2.9110	22 56 18.2	0.598	7	7 2 4.15	2.0781	20 23 25.0	5.577
8	5 21 5.57	2.9091	22 55 38.9	0.712	8	7 4 8.74	2.0748	20 17 47.7	5.667
9	5 23 18.06	2.9072	22 54 52.8	0.826	9	7 6 13.13	2.0716	20 12 5.0	5.757
10	5 25 30.43	2.9051	22 53 59.8	0.940	10	7 8 17.33	2.0683	20 6 16.9	5.846
11	5 27 42.67	2.9029	22 53 0.0	1.054	11	7 10 21.33	2.0651	20 0 23.5	5.933
12	5 29 54.78	2.9008	22 51 53.3	1.167	12	7 12 25.14	2.0619	19 54 24.9	6.021
13	5 32 6.76	2.1986	22 50 39.9	1.279	13	7 14 28.76	2.0587	19 48 21.0	6.108
14	5 34 18.61	2.1963	22 49 19.8	1.392	14	7 16 32.19	2.0555	19 42 11.9	6.195
15	5 36 30.32	2.1940	22 47 52.9	1.504	15	7 18 35.42	2.0523	19 35 57.6	6.282
16	5 38 41.89	2.1917	22 46 19.3	1.616	16	7 20 38.46	2.0491	19 29 38.1	6.367
17	5 40 53.32	2.1893	22 44 39.0	1.727	17	7 22 41.31	2.0459	19 23 13.6	6.451
18	5 43 4.61	2.1869	22 42 52.1	1.837	18	7 24 43.97	2.0428	19 16 44.0	6.535
19	5 45 15.75	2.1844	22 40 58.5	1.947	19	7 26 46.44	2.0396	19 10 9.4	6.618
20	5 47 26.74	2.1820	22 38 58.4	2.057	20	7 28 48.72	2.0363	19 3 29.8	6.702
21	5 49 37.59	2.1795	22 36 51.7	2.167	21	7 30 50.80	2.0332	18 56 45.2	6.784
22	5 51 48.28	2.1769	22 34 38.4	2.276	22	7 32 52.70	2.0301	18 49 55.7	6.865
23	5 53 58.82	2.1743	N.22 32 18.6	2.384	23	7 34 54.41	2.0270	N.18 43 1.4	6.945
MONDAY 2.					WEDNESDAY 4.				
0	5 56 9.20	2.1717	N.22 29 52.3	2.492	0	7 36 55.94	2.0239	N.18 36 2.3	7.025
1	5 58 19.42	2.1690	22 27 19.5	2.600	1	7 38 57.28	2.0208	18 28 58.4	7.105
2	6 0 29.48	2.1662	22 24 40.3	2.707	2	7 40 58.44	2.0177	18 21 49.7	7.185
3	6 2 39.37	2.1635	22 21 54.7	2.813	3	7 42 59.41	2.0147	18 14 36.2	7.264
4	6 4 49.10	2.1607	22 19 2.8	2.919	4	7 45 0.20	2.0116	18 7 18.0	7.342
5	6 6 58.66	2.1580	22 16 4.5	3.025	5	7 47 0.80	2.0085	17 59 55.2	7.419
6	6 9 8.06	2.1552	22 12 59.8	3.131	6	7 49 1.22	2.0055	17 52 27.7	7.496
7	6 11 17.29	2.1523	22 9 48.8	3.235	7	7 51 1.46	2.0025	17 44 55.7	7.572
8	6 13 26.34	2.1494	22 6 31.6	3.338	8	7 53 1.52	1.9996	17 37 19.1	7.648
9	6 15 35.22	2.1465	22 3 8.2	3.442	9	7 55 1.41	1.9967	17 29 38.0	7.722
10	6 17 43.92	2.1436	21 59 38.6	3.545	10	7 57 1.12	1.9937	17 21 52.5	7.795
11	6 19 52.45	2.1407	21 56 2.8	3.647	11	7 59 0.66	1.9908	17 14 2.6	7.869
12	6 22 0.80	2.1377	21 52 20.9	3.749	12	8 1 0.02	1.9879	17 6 8.2	7.943
13	6 24 8.97	2.1347	21 48 32.9	3.851	13	8 2 59.21	1.9851	16 58 9.5	8.014
14	6 26 16.96	2.1316	21 44 38.8	3.952	14	8 4 58.23	1.9823	16 50 6.5	8.086
15	6 28 24.76	2.1285	21 40 38.7	4.052	15	8 6 57.09	1.9796	16 41 59.2	8.157
16	6 30 32.38	2.1255	21 36 32.6	4.151	16	8 8 55.78	1.9767	16 33 47.6	8.228
17	6 32 39.82	2.1225	21 32 20.5	4.251	17	8 10 54.30	1.9739	16 25 31.8	8.298
18	6 34 47.08	2.1194	21 28 2.5	4.349	18	8 12 52.65	1.9712	16 17 11.9	8.367
19	6 36 54.15	2.1163	21 23 38.6	4.447	19	8 14 50.84	1.9686	16 8 47.8	8.436
20	6 39 1.03	2.1131	21 19 8.9	4.544	20	8 16 48.88	1.9660	16 0 19.6	8.504
21	6 41 7.72	2.1099	21 14 33.3	4.642	21	8 18 46.76	1.9624	15 51 47.3	8.572
22	6 43 14.22	2.1068	21 9 51.9	4.738	22	8 20 44.49	1.9608	15 43 11.0	8.638
23	6 45 20.53	2.1037	21 5 4.8	4.833	23	8 22 42.06	1.9582	15 34 30.7	8.704
24	6 47 26.66	2.1005	N.21 0 12.0	4.928	24	8 24 39.47	1.9556	N.15 25 46.5	8.770

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 5.					SATURDAY 7.				
0	8 24 39.47	1.9556	N. 15° 25' 46.5"	8.770	0	9 56 24.23	1.8852	N. 7° 20' 19.7"	11.234
1	8 26 39.73	1.9531	15 16 58.3	8.835	1	9 58 17.34	1.8850	7 9 4.5	11.272
2	8 28 39.85	1.9507	15 8 6.3	8.899	2	10 0 10.43	1.8848	6 57 47.1	11.308
3	8 30 30.82	1.9483	14 59 10.4	8.963	3	10 2 3.51	1.8847	6 46 27.6	11.343
4	8 32 27.64	1.9459	14 50 10.7	9.027	4	10 3 56.59	1.8847	6 35 6.0	11.378
5	8 34 24.33	1.9436	14 41 7.2	9.090	5	10 5 49.67	1.8846	6 23 42.3	11.413
6	8 36 20.88	1.9413	14 31 59.9	9.152	6	10 7 42.74	1.8846	6 12 16.5	11.447
7	8 38 17.29	1.9391	14 22 48.9	9.213	7	10 9 35.82	1.8848	6 0 48.7	11.480
8	8 40 13.57	1.9368	14 13 34.3	9.273	8	10 11 28.91	1.8850	5 49 18.9	11.513
9	8 42 9.71	1.9346	14 4 16.1	9.333	9	10 13 22.02	1.8852	5 37 47.1	11.546
10	8 44 5.72	1.9324	13 54 54.3	9.393	10	10 15 15.14	1.8855	5 26 13.4	11.577
11	8 46 1.60	1.9303	13 45 28.9	9.453	11	10 17 8.28	1.8859	5 14 37.9	11.608
12	8 47 57.36	1.9282	13 35 59.9	9.512	12	10 19 1.45	1.8864	5 3 0.5	11.638
13	8 49 52.99	1.9262	13 26 27.4	9.570	13	10 20 54.65	1.8868	4 51 21.3	11.668
14	8 51 48.50	1.9242	13 16 51.5	9.627	14	10 22 47.87	1.8873	4 39 40.3	11.697
15	8 53 43.90	1.9223	13 7 12.2	9.683	15	10 24 41.12	1.8879	4 27 57.6	11.726
16	8 55 39.18	1.9204	12 57 29.5	9.740	16	10 26 34.41	1.8886	4 16 13.2	11.753
17	8 57 34.35	1.9186	12 47 43.4	9.796	17	10 28 27.75	1.8893	4 4 27.2	11.780
18	8 59 29.41	1.9168	12 37 54.0	9.851	18	10 30 21.13	1.8901	3 52 39.6	11.807
19	9 1 24.36	1.9150	12 28 1.3	9.905	19	10 32 14.56	1.8909	3 40 50.4	11.833
20	9 3 19.21	1.9132	12 18 5.4	9.959	20	10 34 8.04	1.8917	3 28 59.7	11.858
21	9 5 13.95	1.9115	12 8 6.2	10.013	21	10 35 1.57	1.8927	3 17 7.4	11.883
22	9 7 8.59	1.9099	11 58 3.8	10.066	22	10 37 55.17	1.8938	3 5 13.7	11.907
23	9 9 3.14	1.9084	N. 11° 47' 58.3"	10.118	23	10 39 48.83	1.8948	N. 2° 53' 18.6"	11.929
FRIDAY 6.					SUNDAY 8.				
0	9 10 57.60	1.9069	N. 11° 37' 49.7"	10.169	0	10 41 42.55	1.8959	N. 2° 41' 22.2"	11.952
1	9 12 51.97	1.9053	11 27 38.0	10.220	1	10 43 36.34	1.8972	2 29 24.4	11.974
2	9 14 46.24	1.9038	11 17 23.3	10.270	2	10 45 30.21	1.8985	2 17 25.3	11.976
3	9 16 40.43	1.9025	11 7 5.6	10.320	3	10 47 24.16	1.8998	2 5 24.9	12.017
4	9 18 34.54	1.9012	10 56 44.9	10.370	4	10 49 18.19	1.9012	1 53 23.3	12.036
5	9 20 28.57	1.8999	10 46 21.2	10.419	5	10 51 12.31	1.9027	1 41 20.6	12.055
6	9 22 22.53	1.8987	10 35 54.6	10.467	6	10 53 6.52	1.9042	1 29 16.7	12.074
7	9 24 16.41	1.8974	10 25 25.2	10.513	7	10 55 0.82	1.9058	1 17 11.7	12.092
8	9 26 10.22	1.8963	10 14 53.0	10.560	8	10 56 55.22	1.9075	1 5 5.7	12.108
9	9 28 3.97	1.8952	10 4 18.0	10.607	9	10 58 49.72	1.9092	0 52 58.7	12.125
10	9 29 57.65	1.8942	9 53 40.2	10.653	10	11 0 44.32	1.9110	0 40 50.7	12.141
11	9 31 51.27	1.8932	9 42 59.6	10.699	11	11 2 39.04	1.9129	0 28 41.8	12.155
12	9 33 44.83	1.8923	9 32 16.3	10.743	12	11 4 33.87	1.9148	0 16 32.1	12.169
13	9 35 38.34	1.8914	9 21 30.4	10.787	13	11 6 28.81	1.9168	N. 0° 4' 21.5"	12.183
14	9 37 31.80	1.8905	9 10 41.9	10.830	14	11 8 23.88	1.9188	S. 0° 7' 49.9"	12.196
15	9 39 25.20	1.8897	8 59 50.8	10.873	15	11 10 19.07	1.9209	0 20 2.0	12.208
16	9 41 18.56	1.8890	8 48 57.1	10.916	16	11 12 14.39	1.9231	0 32 14.8	12.219
17	9 43 11.88	1.8884	8 38 0.9	10.958	17	11 14 9.84	1.9252	0 44 28.3	12.230
18	9 45 5.17	1.8878	8 27 2.2	10.999	18	11 16 5.42	1.9275	0 56 42.4	12.239
19	9 46 58.42	1.8872	8 16 1.0	11.040	19	11 18 1.14	1.9299	1 8 57.0	12.248
20	9 48 51.63	1.8866	8 4 57.4	11.079	20	11 19 57.01	1.9324	1 21 12.1	12.256
21	9 50 44.81	1.8862	7 53 51.5	11.118	21	11 21 53.03	1.9349	1 33 27.7	12.263
22	9 52 37.97	1.8858	7 42 43.2	11.157	22	11 23 49.20	1.9375	1 45 43.7	12.270
23	9 54 31.11	1.8855	7 31 32.6	11.196	23	11 25 45.53	1.9401	1 58 0.1	12.276
24	9 56 24.23	1.8852	N. 7° 20' 19.7"	11.234	24	11 27 42.01	1.9428	S. 2° 10' 16.8"	12.281

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 9.					WEDNESDAY 11.				
0	11 27 42.01	1.9498	S. 2 10' 16.8"	12.981	0	13 5 16.12	2.1459	S. 11 47' 29.4"	11.363
1	11 29 38.66	1.9456	2 22 33.8	12.985	1	13 7 25.04	2.1515	11 58 49.8	11.317
2	11 31 35.48	1.9483	2 34 51.0	12.987	2	13 9 34.30	2.1572	12 10 7.4	11.268
3	11 33 32.46	1.9519	2 47 8.3	12.989	3	13 11 43.90	2.1638	12 21 22.0	11.218
4	11 35 29.62	1.9543	2 59 25.7	12.991	4	13 13 53.84	2.1686	12 32 33.6	11.166
5	11 37 26.96	1.9579	3 11 43.2	12.992	5	13 16 4.13	2.1744	12 43 42.0	11.113
6	11 39 24.49	1.9603	3 24 0.7	12.991	6	13 18 14.77	2.1803	12 54 47.2	11.060
7	11 41 22.20	1.9634	3 36 18.1	12.989	7	13 20 25.76	2.1869	13 5 49.2	11.005
8	11 43 20.10	1.9667	3 48 35.4	12.987	8	13 22 37.11	2.1931	13 16 47.8	10.947
9	11 45 18.20	1.9700	4 0 52.6	12.985	9	13 24 48.81	2.1980	13 27 42.9	10.889
10	11 47 16.50	1.9733	4 13 9.6	12.982	10	13 27 0.87	2.2040	13 38 34.5	10.831
11	11 49 15.00	1.9767	4 25 26.4	12.977	11	13 29 13.29	2.2100	13 49 22.6	10.771
12	11 51 13.70	1.9801	4 37 42.9	12.979	12	13 31 26.07	2.2161	14 0 7.0	10.706
13	11 53 12.61	1.9837	4 49 59.0	12.965	13	13 33 39.22	2.2222	14 10 47.6	10.644
14	11 55 11.74	1.9873	5 2 14.7	12.957	14	13 35 52.73	2.2283	14 21 24.3	10.570
15	11 57 11.09	1.9910	5 14 29.8	12.948	15	13 38 6.61	2.2344	14 31 57.1	10.512
16	11 59 10.66	1.9947	5 26 44.4	12.938	16	13 40 20.86	2.2406	14 42 25.8	10.444
17	12 1 10.46	1.9985	5 38 58.4	12.927	17	13 42 35.48	2.2468	14 52 50.4	10.375
18	12 3 10.48	2.0023	5 51 11.7	12.916	18	13 44 50.47	2.2530	15 3 10.8	10.304
19	12 5 10.74	2.0062	6 3 24.3	12.904	19	13 47 5.84	2.2592	15 13 26.9	10.232
20	12 7 11.23	2.0102	6 15 36.2	12.891	20	13 49 21.58	2.2655	15 23 38.6	10.158
21	12 9 11.96	2.0143	6 27 47.2	12.876	21	13 51 37.70	2.2718	15 33 45.9	10.083
22	12 11 12.94	2.0181	6 39 57.3	12.861	22	13 53 54.20	2.2782	15 43 48.6	10.007
23	12 13 14.17	2.0226	S. 6 52 6.5	12.844	23	13 56 11.08	2.2845	S. 15 53 46.7	9.938
TUESDAY 10.					THURSDAY 12.				
0	12 15 15.65	2.0268	S. 7 4 14.6	12.826	0	13 58 28.34	2.2908	S. 16 3 40.0	9.868
1	12 17 17.39	2.0311	7 16 21.6	12.810	1	14 0 45.98	2.2973	16 13 28.5	9.767
2	12 19 19.39	2.0355	7 28 27.5	12.808	2	14 3 4.00	2.3035	16 23 12.1	9.664
3	12 21 21.65	2.0398	7 40 32.2	12.807	3	14 5 22.40	2.3098	16 32 50.6	9.560
4	12 23 24.17	2.0443	7 52 35.6	12.805	4	14 7 41.18	2.3162	16 42 24.0	9.514
5	12 25 26.97	2.0489	8 4 37.6	12.802	5	14 10 0.34	2.3226	16 51 52.3	9.437
6	12 27 30.04	2.0535	8 16 38.3	11.999	6	14 12 19.89	2.3290	17 1 15.3	9.338
7	12 29 33.39	2.0582	8 28 37.5	11.973	7	14 14 39.82	2.3353	17 10 32.9	9.247
8	12 31 37.02	2.0628	8 40 35.1	11.947	8	14 17 0.13	2.3417	17 19 45.0	9.156
9	12 33 40.93	2.0676	8 52 31.1	11.919	9	14 19 20.82	2.3481	17 28 51.6	9.063
10	12 35 45.13	2.0725	9 4 25.4	11.891	10	14 21 41.90	2.3545	17 37 52.6	8.968
11	12 37 49.63	2.0774	9 16 18.0	11.863	11	14 24 3.36	2.3608	17 46 47.8	8.873
12	12 39 54.42	2.0823	9 28 8.8	11.831	12	14 26 25.20	2.3672	17 55 37.2	8.773
13	12 41 59.51	2.0873	9 39 57.7	11.798	13	14 28 47.42	2.3735	18 4 20.6	8.674
14	12 44 4.90	2.0924	9 51 44.6	11.765	14	14 31 10.02	2.3798	18 12 58.1	8.574
15	12 46 10.60	2.0975	10 3 29.5	11.731	15	14 33 33.00	2.3861	18 21 29.5	8.472
16	12 48 16.60	2.1027	10 15 12.3	11.695	16	14 35 56.35	2.3924	18 29 54.7	8.368
17	12 50 22.92	2.1079	10 26 52.9	11.657	17	14 38 20.08	2.3987	18 38 13.6	8.263
18	12 52 29.55	2.1132	10 38 31.1	11.618	18	14 40 44.19	2.4049	18 46 26.2	8.156
19	12 54 36.50	2.1185	10 50 7.0	11.579	19	14 43 8.67	2.4111	18 54 32.3	8.047
20	12 56 43.77	2.1238	11 1 40.6	11.539	20	14 45 33.52	2.4172	19 2 31.8	7.937
21	12 58 51.36	2.1292	11 13 11.7	11.497	21	14 47 58.74	2.4234	19 10 24.7	7.825
22	13 0 59.28	2.1347	11 24 40.3	11.454	22	14 50 24.33	2.4295	19 18 10.8	7.719
23	13 3 7.53	2.1403	11 36 6.2	11.409	23	14 52 50.28	2.4355	19 25 50.2	7.599
24	13 5 16.12	2.1459	S. 11 47 29.4	11.363	24	14 55 16.59	2.4415	S. 19 33 22.7	7.463

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 13.					SUNDAY 15.				
0	14 55 16.59	2.4415	S. 19° 33' 22.7	7.483	0	16 58 1.49	2.6337	S. 22° 55' 14.9	0.548
1	14 57 43.26	2.4475	19 40 48.2	7.366	1	17 0 39.55	2.6348	22 55 42.9	0.385
2	15 0 10.29	2.4535	19 48 6.6	7.947	2	17 3 17.67	2.6358	22 56 1.1	0.991
3	15 2 37.68	2.4594	19 55 17.9	7.197	3	17 5 55.85	2.6367	22 56 9.4	-0.057
4	15 5 5.42	2.4652	20 2 21.9	7.006	4	17 8 34.07	2.6373	22 56 7.9	+0.106
5	15 7 33.51	2.4710	20 9 18.6	6.883	5	17 11 12.33	2.6379	22 55 56.6	0.909
6	15 10 1.94	2.4767	20 16 7.9	6.759	6	17 13 50.62	2.6383	22 55 35.6	0.432
7	15 12 30.72	2.4824	20 22 49.7	6.633	7	17 16 28.93	2.6386	22 55 4.7	0.506
8	15 14 59.83	2.4880	20 29 23.9	6.506	8	17 19 7.25	2.6387	22 54 24.0	0.760
9	15 17 29.28	2.4936	20 35 50.4	6.377	9	17 21 45.58	2.6387	22 53 33.5	0.923
10	15 19 59.06	2.4990	20 42 9.2	6.248	10	17 24 23.90	2.6386	22 52 33.2	1.087
11	15 22 29.16	2.5044	20 48 20.2	6.117	11	17 27 2.21	2.6383	22 51 23.0	1.259
12	15 24 59.59	2.5098	20 54 23.3	5.985	12	17 29 40.50	2.6379	22 50 3.0	1.415
13	15 27 30.34	2.5151	21 0 18.4	5.851	13	17 32 18.76	2.6373	22 48 33.2	1.578
14	15 30 1.40	2.5202	21 6 5.4	5.716	14	17 34 56.98	2.6366	22 46 53.6	1.741
15	15 32 32.76	2.5253	21 11 44.3	5.580	15	17 37 35.15	2.6357	22 45 4.3	1.903
16	15 35 4.43	2.5303	21 17 15.0	5.442	16	17 40 13.26	2.6348	22 43 5.2	2.066
17	15 37 36.40	2.5352	21 22 37.4	5.304	17	17 42 51.32	2.6338	22 40 56.4	2.228
18	15 40 8.66	2.5401	21 27 51.5	5.165	18	17 45 29.31	2.6325	22 38 37.0	2.389
19	15 42 41.21	2.5448	21 32 57.2	5.024	19	17 48 7.22	2.6311	22 36 9.7	2.551
20	15 45 14.04	2.5495	21 37 54.4	4.882	20	17 50 45.04	2.6295	22 33 31.8	2.712
21	15 47 47.15	2.5541	21 42 43.0	4.738	21	17 53 22.76	2.6279	22 30 44.3	2.872
22	15 50 20.53	2.5585	21 47 23.0	4.594	22	17 56 0.38	2.6262	22 27 47.2	3.032
23	15 52 54.17	2.5629	S. 21° 51' 54.3	4.448	23	17 58 37.90	2.6243	S. 22° 24' 40.5	3.192
SATURDAY 14.					MONDAY 16.				
0	15 55 28.07	2.5679	S. 21° 56' 16.8	4.302	0	18 1 15.30	2.6229	S. 22° 21' 24.2	3.351
1	15 58 2.23	2.5713	22 0 30.5	4.155	1	18 3 52.57	2.6201	22 17 58.4	3.508
2	16 0 36.63	2.5753	22 4 35.4	4.007	2	18 6 29.71	2.6178	22 14 23.2	3.666
3	16 3 11.27	2.5793	22 8 31.3	3.857	3	18 9 6.71	2.6154	22 10 38.5	3.823
4	16 5 46.15	2.5832	22 12 18.2	3.707	4	18 11 43.56	2.6129	22 6 44.4	3.979
5	16 8 21.25	2.5868	22 15 56.1	3.556	5	18 14 20.26	2.6103	22 2 41.0	4.134
6	16 10 56.57	2.5904	22 19 24.9	3.404	6	18 16 56.80	2.6076	21 58 28.3	4.289
7	16 13 32.10	2.5939	22 22 44.6	3.251	7	18 19 33.17	2.6047	21 54 6.3	4.443
8	16 16 7.84	2.5973	22 25 55.0	3.096	8	18 22 9.37	2.6017	21 49 35.1	4.597
9	16 18 43.78	2.6006	22 28 56.1	2.941	9	18 24 45.38	2.5986	21 44 54.7	4.749
10	16 21 19.91	2.6037	22 31 47.9	2.786	10	18 27 21.20	2.5954	21 40 5.2	4.900
11	16 23 56.23	2.6067	22 34 30.4	2.630	11	18 29 56.83	2.5922	21 35 6.7	5.050
12	16 26 32.72	2.6096	22 37 3.5	2.473	12	18 32 32.26	2.5888	21 29 59.2	5.200
13	16 29 9.38	2.6123	22 39 27.2	2.316	13	18 35 7.48	2.5853	21 24 42.7	5.349
14	16 31 46.20	2.6149	22 41 41.4	2.157	14	18 37 42.49	2.5818	21 19 17.3	5.496
15	16 34 23.17	2.6174	22 43 46.0	1.998	15	18 40 17.29	2.5782	21 13 43.2	5.642
16	16 37 0.29	2.6198	22 45 41.1	1.838	16	18 42 51.87	2.5743	21 8 0.3	5.787
17	16 39 37.55	2.6220	22 47 26.6	1.679	17	18 45 26.21	2.5704	21 2 8.7	5.932
18	16 42 14.93	2.6240	22 49 2.6	1.520	18	18 48 0.32	2.5665	20 56 8.4	6.076
19	16 44 52.43	2.6260	22 50 29.0	1.358	19	18 50 34.19	2.5624	20 49 59.6	6.218
20	16 47 30.05	2.6279	22 51 45.6	1.196	20	18 53 7.81	2.5583	20 43 42.3	6.359
21	16 50 7.78	2.6296	22 52 52.5	1.034	21	18 55 41.18	2.5541	20 37 16.5	6.499
22	16 52 45.60	2.6310	22 53 49.7	0.872	22	18 58 14.30	2.5499	20 30 42.4	6.637
23	16 55 23.50	2.6324	22 54 37.2	0.710	23	19 0 47.17	2.5457	20 24 0.0	6.775
24	16 58 1.49	2.6337	S. 22° 55' 14.9	0.548	24	19 3 19.78	2.5413	S. 20° 17' 9.4	6.919

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 17.					THURSDAY 19.				
0	19 3 19.78	2.5413	S. 20° 17' 9.4"	6.912	0	20 59 29.70	2.9959	S. 12° 34' 31.1"	11.802
1	19 5 52.12	2.5367	20 10 10.6	7.047	1	21 1 47.31	2.9910	12 22 41.0	11.867
2	19 8 24.18	2.5321	20 3 3.8	7.180	2	21 4 4.62	2.9861	12 10 47.1	11.930
3	19 10 55.97	2.5275	19 55 49.0	7.312	3	21 6 21.64	2.9813	11 58 49.4	11.992
4	19 13 27.48	2.5229	19 48 26.3	7.444	4	21 8 38.37	2.9765	11 46 48.0	12.053
5	19 15 58.71	2.5182	19 40 55.7	7.575	5	21 10 54.82	2.9718	11 34 43.0	12.113
6	19 18 29.66	2.5134	19 33 17.3	7.703	6	21 13 10.99	2.9672	11 22 34.4	12.172
7	19 21 0.32	2.5085	19 25 31.3	7.830	7	21 15 26.88	2.9625	11 10 22.4	12.236
8	19 23 30.68	2.5036	19 17 37.7	7.957	8	21 17 42.49	2.9579	10 58 7.0	12.293
9	19 26 0.75	2.4987	19 9 36.5	8.082	9	21 19 57.83	2.9534	10 45 48.4	12.337
10	19 28 30.52	2.4937	19 1 27.9	8.205	10	21 22 12.90	2.9489	10 33 26.6	12.390
11	19 30 59.99	2.4887	18 53 11.9	8.327	11	21 24 27.70	2.9444	10 21 1.6	12.442
12	19 33 29.16	2.4838	18 44 48.7	8.447	12	21 26 42.23	2.9400	10 8 33.6	12.492
13	19 35 58.02	2.4785	18 36 18.3	8.567	13	21 28 56.50	2.9357	9 56 2.6	12.539
14	19 38 26.58	2.4734	18 27 40.7	8.684	14	21 31 10.51	2.9314	9 43 28.9	12.584
15	19 40 54.83	2.4683	18 18 56.2	8.799	15	21 33 24.27	2.9272	9 30 52.5	12.629
16	19 43 22.77	2.4631	18 10 4.8	8.914	16	21 35 37.78	2.9231	9 18 13.4	12.674
17	19 45 50.40	2.4578	18 1 6.5	9.028	17	21 37 51.04	2.9189	9 5 31.6	12.717
18	19 48 17.71	2.4526	17 52 1.4	9.140	18	21 40 4.05	2.9148	8 52 47.3	12.758
19	19 50 44.71	2.4473	17 42 49.7	9.250	19	21 42 16.82	2.9108	8 40 0.6	12.796
20	19 53 11.39	2.4420	17 33 31.4	9.359	20	21 44 29.35	2.9068	8 27 11.5	12.837
21	19 55 37.75	2.4367	17 24 6.6	9.467	21	21 46 41.64	2.9029	8 14 20.2	12.873
22	19 58 3.80	2.4315	17 14 35.4	9.573	22	21 48 53.70	2.8991	8 1 26.7	12.909
23	20 0 29.53	2.4262	S. 17° 4' 57.9"	9.678	23	21 51 5.53	2.8953	S. 7° 48' 31.1"	12.943
WEDNESDAY 18.					FRIDAY 20.				
0	20 2 54.94	2.4908	S. 16° 55' 14.1"	9.781	0	21 53 17.14	2.8917	S. 7° 35' 33.5"	12.977
1	20 5 20.03	2.4155	16 45 24.2	9.882	1	21 55 28.53	2.8880	7 22 33.9	13.008
2	20 7 44.80	2.4102	16 35 28.3	9.982	2	21 57 39.70	2.8843	7 9 32.5	13.038
3	20 10 9.25	2.4048	16 25 26.4	10.081	3	21 59 50.65	2.8807	6 56 29.3	13.067
4	20 12 33.38	2.3995	16 15 18.6	10.178	4	22 2 1.39	2.8773	6 43 24.4	13.096
5	20 14 57.19	2.3941	16 5 5.1	10.273	5	22 4 11.93	2.8740	6 30 17.8	13.123
6	20 17 20.67	2.3888	15 54 45.9	10.367	6	22 6 22.27	2.8707	6 17 9.7	13.148
7	20 19 43.84	2.3835	15 44 21.1	10.459	7	22 8 32.41	2.8674	6 4 0.1	13.172
8	20 22 6.69	2.3782	15 33 50.8	10.550	8	22 10 42.35	2.8641	5 50 49.1	13.194
9	20 24 29.22	2.3729	15 23 15.1	10.640	9	22 12 52.10	2.8609	5 37 36.8	13.215
10	20 26 51.43	2.3676	15 12 34.0	10.728	10	22 15 1.60	2.8578	5 24 23.3	13.235
11	20 29 13.33	2.3623	15 1 47.7	10.814	11	22 17 11.04	2.8548	5 11 8.6	13.254
12	20 31 34.91	2.3571	14 50 56.3	10.899	12	22 19 20.24	2.8519	4 57 52.8	13.272
13	20 33 56.18	2.3518	14 39 59.8	10.982	13	22 21 29.27	2.8490	4 44 36.0	13.288
14	20 36 17.13	2.3466	14 28 58.4	11.064	14	22 23 38.12	2.8461	4 31 18.3	13.303
15	20 38 37.77	2.3414	14 17 52.1	11.145	15	22 25 46.80	2.8433	4 17 59.7	13.317
16	20 40 58.10	2.3362	14 6 41.0	11.224	16	22 27 55.31	2.8406	4 4 40.3	13.329
17	20 43 18.12	2.3310	13 55 25.2	11.302	17	22 30 3.67	2.8380	3 51 20.2	13.340
18	20 45 37.82	2.3258	13 44 4.8	11.378	18	22 32 11.87	2.8354	3 37 59.5	13.350
19	20 47 57.22	2.3206	13 32 39.9	11.452	19	22 34 19.92	2.8329	3 24 38.2	13.359
20	20 50 16.32	2.3157	13 21 10.6	11.524	20	22 36 27.82	2.8304	3 11 16.4	13.367
21	20 52 35.11	2.3107	13 9 37.0	11.595	21	22 38 35.57	2.8280	2 57 54.2	13.373
22	20 54 53.60	2.3057	12 57 59.2	11.665	22	22 40 43.18	2.8257	2 44 31.6	13.379
23	20 57 11.80	2.3008	12 46 17.2	11.734	23	22 42 50.66	2.8235	2 31 8.7	13.383
24	20 59 29.70	2.2959	S. 12° 34' 31.1"	11.802	24	22 44 58.00	2.8213	S. 2° 17' 45.6"	13.386

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 21.					MONDAY 23.				
0	^h 22 ^m 44 ^s 58.00	2.1913	S. 2° 17' 45.6"	13.386	0	^h 0 ^m 25 ^s 29.20	2.0900	N. 8° 7' 1.1"	12.941
1	22 47 5.21	2.1199	2 4 22.4	13.387	1	0 27 34.62	2.0907	8 19 14.1	12.192
2	22 49 12.30	2.1179	1 50 59.1	13.388	2	0 29 40.08	2.0914	8 31 24.1	12.142
3	22 51 19.27	2.1152	1 37 35.8	13.387	3	0 31 45.59	2.0922	8 43 31.1	12.092
4	22 53 26.12	2.1139	1 24 12.6	13.386	4	0 33 51.15	2.0931	8 55 35.1	12.040
5	22 55 32.86	2.1114	1 10 49.5	13.383	5	0 35 56.76	2.0940	9 7 35.9	11.987
6	22 57 39.49	2.1097	0 57 26.6	13.379	6	0 38 2.43	2.0949	9 19 33.5	11.933
7	22 59 46.02	2.1079	0 44 4.0	13.374	7	0 40 8.15	2.0959	9 31 27.8	11.878
8	23 1 52.44	2.1062	0 30 41.7	13.367	8	0 42 13.94	2.0970	9 43 18.9	11.823
9	23 3 58.76	2.1046	0 17 19.9	13.360	9	0 44 19.79	2.0981	9 55 6.6	11.767
10	23 6 4.99	2.1031	S. 0 3 58.5	13.352	10	0 46 25.71	2.0992	10 6 50.9	11.709
11	23 8 11.13	2.1017	N. 0 9 22.3	13.342	11	0 48 31.69	2.1003	10 18 31.7	11.651
12	23 10 17.19	2.1003	0 22 42.5	13.331	12	0 50 37.74	2.1015	10 30 9.0	11.592
13	23 12 23.16	2.0989	0 36 2.0	13.319	13	0 52 43.87	2.1027	10 41 42.7	11.531
14	23 14 29.06	2.0976	0 49 20.8	13.307	14	0 54 50.07	2.1039	10 53 12.7	11.470
15	23 16 34.88	2.0964	1 2 38.8	13.292	15	0 56 56.34	2.1052	11 4 39.1	11.408
16	23 18 40.63	2.0953	1 15 55.9	13.277	16	0 59 2.69	2.1065	11 16 1.7	11.345
17	23 20 46.32	2.0942	1 29 12.1	13.262	17	1 1 9.12	2.1079	11 27 20.5	11.281
18	23 22 51.94	2.0932	1 42 27.3	13.244	18	1 3 15.64	2.1093	11 38 35.4	11.216
19	23 24 57.50	2.0922	1 55 41.4	13.226	19	1 5 22.24	2.1107	11 49 46.4	11.150
20	23 27 3.01	2.0913	2 8 54.4	13.206	20	1 7 28.93	2.1122	12 0 53.4	11.084
21	23 29 8.46	2.0904	2 22 6.1	13.185	21	1 9 35.70	2.1136	12 11 56.5	11.017
22	23 31 13.86	2.0897	2 35 16.6	13.164	22	1 11 42.56	2.1152	12 22 55.5	10.948
23	23 33 19.22	2.0891	N. 2 48 25.8	13.141	23	1 13 49.52	2.1167	N. 12 33 50.3	10.879
SUNDAY 22.					TUESDAY 24.				
0	23 35 24.55	2.0885	N. 3 1 33.5	13.117	0	1 15 56.57	2.1183	N. 12 44 41.0	10.810
1	23 37 29.84	2.0878	3 14 39.8	13.099	1	1 18 3.72	2.1199	12 55 27.5	10.738
2	23 39 35.09	2.0873	3 27 44.6	13.086	2	1 20 10.96	2.1215	13 6 9.6	10.666
3	23 41 40.31	2.0868	3 40 47.8	13.039	3	1 22 18.30	2.1232	13 16 47.4	10.593
4	23 43 45.51	2.0865	3 53 49.3	13.012	4	1 24 25.74	2.1248	13 27 20.8	10.519
5	23 45 50.69	2.0861	4 6 49.2	12.983	5	1 26 33.28	2.1265	13 37 49.7	10.445
6	23 47 55.84	2.0858	4 19 47.3	12.953	6	1 28 40.92	2.1282	13 48 14.2	10.370
7	23 50 0.98	2.0856	4 32 43.5	12.922	7	1 30 48.67	2.1300	13 58 34.1	10.294
8	23 52 6.11	2.0854	4 45 37.9	12.890	8	1 32 56.52	2.1317	14 8 49.4	10.217
9	23 54 11.23	2.0852	4 58 30.3	12.857	9	1 35 4.47	2.1334	14 19 0.1	10.139
10	23 56 16.34	2.0852	5 11 20.7	12.823	10	1 37 12.53	2.1352	14 29 6.1	10.060
11	23 58 21.45	2.0852	5 24 9.0	12.788	11	1 39 20.70	2.1371	14 39 7.3	9.981
12	0 0 26.56	2.0853	5 36 55.2	12.752	12	1 41 28.98	2.1389	14 49 3.8	9.901
13	0 2 31.68	2.0854	5 49 39.2	12.714	13	1 43 37.37	2.1407	14 58 55.4	9.819
14	0 4 36.81	2.0855	6 2 20.9	12.676	14	1 45 45.87	2.1426	15 8 42.1	9.737
15	0 6 41.94	2.0857	6 15 0.3	12.637	15	1 47 54.48	2.1444	15 18 23.8	9.654
16	0 8 47.09	2.0860	6 27 37.4	12.597	16	1 50 3.20	2.1463	15 28 0.6	9.571
17	0 10 52.26	2.0863	6 40 12.0	12.556	17	1 52 12.03	2.1482	15 37 32.3	9.486
18	0 12 57.45	2.0867	6 52 44.1	12.514	18	1 54 20.98	2.1501	15 46 58.9	9.401
19	0 15 2.67	2.0872	7 5 13.7	12.471	19	1 56 30.04	2.1519	15 56 20.4	9.316
20	0 17 7.91	2.0876	7 17 40.6	12.427	20	1 58 39.21	2.1538	16 5 36.8	9.230
21	0 19 13.18	2.0881	7 30 4.9	12.389	21	2 0 48.50	2.1557	16 14 48.0	9.142
22	0 21 18.48	2.0887	7 42 26.5	12.336	22	2 2 57.90	2.1577	16 23 53.9	9.053
23	0 23 23.82	2.0893	7 54 45.2	12.289	23	2 5 7.42	2.1596	16 32 54.4	8.963
24	0 25 29.20	2.0900	N. 8 7 1.1	12.241	24	2 7 17.05	2.1615	N. 16 41 49.5	8.873

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 25.					FRIDAY 27.				
0	2 7 17.05	2.1615	N.16° 41' 49.5"	8.873	0	3 52 56.74	2.9301	N.21° 52' 1.8"	3.849
1	2 9 26.80	2.1634	16 50 39.2	8.783	1	3 55 10.56	2.9306	21 55 49.3	3.734
2	2 11 36.66	2.1652	16 59 23.5	8.692	2	3 57 24.41	2.9311	21 59 29.9	3.618
3	2 13 46.63	2.1671	17 8 2.3	8.601	3	3 59 38.29	2.9315	22 3 3.5	3.503
4	2 15 56.71	2.1690	17 16 35.6	8.508	4	4 1 52.19	2.9318	22 6 30.2	3.387
5	2 18 6.91	2.1709	17 25 3.3	8.414	5	4 4 6.11	2.9322	22 9 49.9	3.270
6	2 20 17.22	2.1737	17 33 25.3	8.320	6	4 6 20.05	2.9324	22 13 2.6	3.154
7	2 22 27.64	2.1746	17 41 41.7	8.225	7	4 8 34.00	2.9326	22 16 8.4	3.038
8	2 24 38.17	2.1765	17 49 52.3	8.130	8	4 10 47.96	2.9327	22 19 7.2	2.922
9	2 26 48.82	2.1784	17 57 57.2	8.033	9	4 13 1.92	2.9328	22 21 59.0	2.805
10	2 28 59.58	2.1803	18 5 56.3	7.937	10	4 15 15.89	2.9328	22 24 43.8	2.688
11	2 31 10.45	2.1821	18 13 49.6	7.839	11	4 17 29.86	2.9327	22 27 21.6	2.571
12	2 33 21.43	2.1839	18 21 37.0	7.741	12	4 19 43.82	2.9326	22 29 52.3	2.453
13	2 35 32.52	2.1857	18 29 18.5	7.642	13	4 21 57.77	2.9325	22 32 16.0	2.337
14	2 37 43.71	2.1874	18 36 54.0	7.543	14	4 24 11.72	2.9324	22 34 32.7	2.220
15	2 39 55.01	2.1892	18 44 23.5	7.443	15	4 26 25.66	2.9323	22 36 42.4	2.103
16	2 42 6.41	2.1909	18 51 47.0	7.341	16	4 28 39.58	2.9318	22 38 45.1	1.986
17	2 44 17.92	2.1926	18 59 4.4	7.240	17	4 30 53.47	2.9313	22 40 40.7	1.869
18	2 46 29.53	2.1943	19 6 15.8	7.138	18	4 33 7.34	2.9309	22 42 29.3	1.752
19	2 48 41.24	2.1960	19 13 21.0	7.035	19	4 35 21.18	2.9304	22 44 10.9	1.634
20	2 50 53.05	2.1977	19 20 20.0	6.932	20	4 37 34.99	2.9299	22 45 45.4	1.517
21	2 53 4.97	2.1994	19 27 12.8	6.828	21	4 39 48.77	2.9293	22 47 12.9	1.400
22	2 55 16.98	2.2009	19 33 59.3	6.723	22	4 42 2.50	2.9285	22 48 33.4	1.283
23	2 57 29.08	2.2025	N.19 40 39.6	6.619	23	4 44 16.19	2.9278	N.22 49 46.9	1.166
THURSDAY 26.					SATURDAY 28.				
0	2 59 41.28	2.2041	N.19 47 13.6	6.513	0	4 46 29.84	2.9271	N.22 50 53.3	1.048
1	3 1 53.57	2.2056	19 53 41.2	6.407	1	4 48 43.44	2.9263	22 51 52.7	0.932
2	3 4 5.95	2.2071	20 0 2.4	6.300	2	4 50 56.98	2.9253	22 52 45.1	0.815
3	3 6 18.42	2.2086	20 6 17.2	6.193	3	4 53 10.47	2.9243	22 53 30.5	0.698
4	3 8 30.98	2.2100	20 12 25.6	6.087	4	4 55 23.90	2.9233	22 54 8.9	0.582
5	3 10 43.62	2.2113	20 18 27.6	5.979	5	4 57 37.26	2.9223	22 54 40.3	0.466
6	3 12 56.34	2.2127	20 24 23.1	5.870	6	4 59 50.56	2.9211	22 55 4.8	0.350
7	3 15 9.14	2.2140	20 30 12.0	5.761	7	5 2 3.79	2.9198	22 55 22.3	0.233
8	3 17 22.02	2.2153	20 35 54.4	5.652	8	5 4 16.94	2.9186	22 55 32.8	0.117
9	3 19 34.98	2.2166	20 41 30.2	5.543	9	5 6 30.02	2.9173	22 55 36.4	+0.002
10	3 21 48.01	2.2178	20 46 59.4	5.433	10	5 8 43.02	2.9159	22 55 33.1	-0.113
11	3 24 1.11	2.2189	20 52 22.0	5.321	11	5 10 55.93	2.9144	22 55 22.8	0.220
12	3 26 14.28	2.2201	20 57 37.9	5.209	12	5 13 8.75	2.9130	22 55 5.6	0.344
13	3 28 27.52	2.2212	21 2 47.1	5.097	13	5 15 21.48	2.9114	22 54 41.5	0.458
14	3 30 40.82	2.2222	21 7 49.6	4.986	14	5 17 34.12	2.9098	22 54 10.6	0.572
15	3 32 54.18	2.2232	21 12 45.4	4.874	15	5 19 4.66	2.9082	22 53 32.8	0.687
16	3 35 7.60	2.2242	21 17 34.5	4.762	16	5 21 59.10	2.9065	22 52 48.2	0.801
17	3 37 21.08	2.2251	21 22 16.8	4.648	17	5 24 11.44	2.9047	22 51 56.7	0.915
18	3 39 34.61	2.2259	21 26 52.3	4.535	18	5 26 23.67	2.9029	22 50 58.4	1.028
19	3 41 48.19	2.2267	21 31 21.0	4.422	19	5 28 35.79	2.9010	22 49 53.3	1.141
20	3 44 1.82	2.2275	21 35 42.9	4.308	20	5 30 47.79	2.1921	22 48 41.5	1.253
21	3 46 15.49	2.2282	21 39 57.9	4.193	21	5 32 59.68	2.1973	22 47 22.9	1.366
22	3 48 29.20	2.2288	21 44 6.1	4.079	22	5 35 11.45	2.1952	22 45 57.6	1.478
23	3 50 42.95	2.2295	21 48 7.4	3.964	23	5 37 23.10	2.1931	22 44 25.6	1.590
24	3 52 56.74	2.2301	N.21 52 1.8	3.849	24	5 39 34.62	2.1909	N.22 42 46.8	1.702

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 29.					TUESDAY 31.				
0	5 ^h 39 ^m 34.62 ^s	2.1900	N.22° 42' 46.8"	1.709	0	7 ^h 21 ^m 35.18 ^s	2.0498	N.19° 22' 14.3"	6.438
1	5 41 46.01	2.1888	22 41 1.4	1.819	1	7 23 38.07	2.0465	19 15 45.5	6.521
2	5 43 57.27	2.1866	22 39 9.4	1.923	2	7 25 40.76	2.0432	19 9 11.7	6.604
3	5 46 8.40	2.1843	22 37 10.8	2.039	3	7 27 43.26	2.0399	19 2 33.0	6.687
4	5 48 19.39	2.1890	22 35 5.6	2.149	4	7 29 45.55	2.0365	18 55 49.3	6.768
5	5 50 30.24	2.1797	22 32 53.8	2.252	5	7 31 47.64	2.0330	18 49 0.8	6.849
6	5 52 40.95	2. 773	22 30 35.4	2.360	6	7 33 49.54	2.0300	18 42 7.4	6.930
7	5 54 51.51	2.1748	22 28 10.6	2.468	7	7 35 51.24	2.0267	18 35 9.2	7.010
8	5 57 1.92	2.1731	22 25 39.3	2.576	8	7 37 52.74	2.0233	18 28 6.2	7.089
9	5 59 12.19	2.1698	22 23 1.5	2.683	9	7 39 54.04	2.0201	18 20 58.5	7.167
10	6 1 22.30	2.1673	22 20 17.3	2.790	10	7 41 55.15	2.0168	18 13 46.1	7.245
11	6 3 32.26	2.1647	22 17 26.7	2.897	11	7 43 56.06	2.0136	18 6 29.1	7.323
12	6 5 42.06	2.1690	22 14 29.7	3.003	12	7 45 56.78	2.0103	17 59 7.4	7.399
13	6 7 51.70	2.1593	22 11 26.3	3.108	13	7 47 57.30	2.0071	17 51 41.2	7.474
14	6 10 1.18	2.1566	22 8 16.7	3.213	14	7 49 57.63	2.0039	17 44 10.5	7.550
15	6 12 10.49	2.1538	22 5 0.8	3.318	15	7 51 57.77	2.0007	17 36 35.2	7.625
16	6 14 19.63	2.1510	22 1 38.6	3.422	16	7 53 57.72	1.9975	17 28 55.5	7.699
17	6 16 28.61	2.1482	21 58 10.2	3.524	17	7 55 57.47	1.9943	17 21 11.4	7.772
18	6 18 37.42	2.1453	21 54 35.7	3.627	18	7 57 57.03	1.9911	17 13 22.9	7.844
19	6 20 46.05	2.1424	21 50 55.0	3.729	19	7 59 56.40	1.9880	17 5 30.1	7.916
20	6 22 54.51	2.1396	21 47 8.2	3.830	20	8 1 55.59	1.9849	16 57 33.0	7.987
21	6 25 2.80	2.1367	21 43 15.2	3.933	21	8 3 54.59	1.9818	16 49 31.6	8.058
22	6 27 10.91	2.1337	21 39 16.2	4.033	22	8 5 53.41	1.9788	16 41 26.0	8.127
23	6 29 18.84	2.1307	N.21 35 11.2	4.133	23	8 7 52.05	1.9757	N.16 33 16.3	8.196
MONDAY 30.					WEDNESDAY, JUNE 1.				
0	6 31 26.59	2.1276	N.21 31 0.2	4.230	0	8 9 50.50	1.9727	N.16 25 2.5	8.264
1	6 33 34.15	2.1245	21 26 43.3	4.331					
2	6 35 41.53	2.1215	21 22 20.5	4.430					
3	6 37 48.73	2.1184	21 17 51.7	4.528					
4	6 39 55.74	2.1152	21 13 17.1	4.625					
5	6 42 2.56	2.1121	21 8 36.7	4.722					
6	6 44 9.19	2.1089	21 3 50.5	4.817					
7	6 46 15.63	2.1057	20 58 58.6	4.912					
8	6 48 21.88	2.1025	20 54 1.0	5.007					
9	6 50 27.93	2.0993	20 48 57.7	5.102					
10	6 52 33.79	2.0961	20 43 48.8	5.195					
11	6 54 39.46	2.0929	20 38 34.3	5.288					
12	6 56 44.94	2.0897	20 33 14.2	5.381					
13	6 58 50.22	2.0863	20 27 48.6	5.479					
14	7 0 55.30	2.0830	20 22 17.6	5.563					
15	7 3 0.18	2.0797	20 16 41.1	5.653					
16	7 5 4.86	2.0764	20 10 59.2	5.743					
17	7 7 9.35	2.0732	20 5 12.0	5.832					
18	7 9 13.64	2.0698	19 59 19.4	5.921					
19	7 11 17.73	2.0665	19 53 21.5	6.008					
20	7 13 21.62	2.0632	19 47 18.4	6.095					
21	7 15 25.31	2.0598	19 41 10.1	6.182					
22	7 17 28.80	2.0565	19 34 56.6	6.268					
23	7 19 32.09	2.0532	19 28 38.0	6.353					
24	7 21 35.18	2.0498	N.19 22 14.3	6.438					

	d	h	m
☾ First Quarter, . . .	5	22	43.9
☾ Full Moon, . . .	13	10	23.8
☾ Last Quarter, . . .	20	3	7.4
● New Moon, . . .	27	11	35.7

	d	h
☾ Apogee,	4	9.1
☾ Perigee,	16	6.1

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	SUN	W.	35° 45' 48"	3292	37° 10' 9"	3300	38° 34' 20"	3310	39° 58' 20"	3319
	Pollux	E.	35 7 42	3107	33 39 41	3133	32 12 11	3161	30 45 15	3192
	Regulus	E.	71 12 10	2935	69 40 36	2945	68 9 14	2955	66 38 5	2965
2	SUN	W.	46 55 48	3362	48 18 48	3370	49 41 39	3377	51 4 22	3384
	Aldebaran	W.	21 25 31	3185	22 51 58	3169	24 18 44	3157	25 45 45	3148
	Regulus	E.	59 5 21	3012	57 35 23	3021	56 5 36	3009	54 35 59	3037
	Spica	E.	113 1 41	2990	111 31 16	2997	110 1 0	3005	108 30 53	3012
3	SUN	W.	57 56 0	3415	59 17 59	3420	60 39 53	3425	62 1 41	3430
	Aldebaran	W.	33 2 46	3128	34 30 22	3126	35 58 0	3125	37 25 39	3124
	Regulus	E.	47 10 20	3075	45 41 40	3062	44 13 8	3068	42 44 44	3095
	Spica	E.	101 2 22	3042	99 33 1	3047	98 3 46	3052	96 34 37	3056
4	SUN	W.	68 49 40	3444	70 11 7	3446	71 32 32	3446	72 53 56	3446
	Aldebaran	W.	44 44 7	3121	46 11 51	3119	47 39 37	3119	49 7 24	3117
	Regulus	E.	35 24 40	3196	33 57 2	3133	32 29 32	3139	31 2 10	3145
	Spica	E.	89 10 1	3070	87 41 15	3073	86 12 31	3073	84 43 49	3074
5	SUN	W.	79 40 59	3442	81 2 28	3439	82 24 0	3437	83 45 35	3433
	Aldebaran	W.	56 26 53	3105	57 54 56	3102	59 23 3	3098	60 51 15	3094
	Spica	E.	77 20 19	3071	75 51 34	3069	74 22 46	3065	72 53 54	3062
	Antares	E.	122 48 16	3078	121 19 40	3076	119 51 1	3073	118 22 19	3069
6	SUN	W.	90 34 42	3408	91 56 50	3401	93 19 5	3393	94 41 29	3386
	Aldebaran	W.	68 13 40	3067	69 42 30	3060	71 11 28	3054	72 40 34	3047
	Pollux	W.	27 22 17	3221	28 46 4	3228	30 10 29	3220	31 35 27	3224
	Spica	E.	65 28 28	3040	63 59 5	3034	62 29 35	3028	60 59 57	3021
7	SUN	W.	101 35 48	3340	102 59 13	3330	104 22 50	3319	105 46 39	3308
	Pollux	W.	38 47 24	3126	40 15 2	3107	41 43 3	3089	43 11 26	3072
	Spica	E.	53 29 29	2981	51 58 52	2971	50 28 3	2962	48 57 2	2951
	Antares	E.	98 59 17	2984	97 28 44	2973	95 57 58	2964	94 27 0	2954
8	SUN	W.	112 49 12	2945	114 14 28	2931	115 40 1	2917	117 5 50	2903
	Pollux	W.	50 38 42	2966	52 9 12	2960	53 40 4	2952	55 11 17	2935
	Spica	E.	41 18 34	2995	39 46 9	2983	38 13 28	2971	36 40 32	2958
	Antares	E.	86 48 42	2995	85 16 17	2983	83 43 36	2969	82 10 38	2957
9	SUN	W.	124 19 20	3126	125 46 58	3110	127 14 55	3094	128 43 12	3077
	Pollux	W.	62 52 39	2952	64 26 0	2935	65 59 43	2918	67 33 48	2901
	Regulus	W.	25 51 16	2973	27 24 9	2948	28 57 34	2925	30 31 30	2902
	Spica	E.	28 51 40	2793	27 17 3	2780	25 42 9	2766	24 6 57	2753
10	SUN	W.	74 21 26	2786	72 46 40	2771	71 11 34	2756	69 36 9	2741
	Pollux	W.	75 29 44	2716	77 6 2	2699	78 42 43	2682	80 19 47	2666
	Regulus	W.	38 28 10	2700	40 4 50	2681	41 41 55	2663	43 19 25	2643
	Antares	E.	61 33 58	2664	59 56 30	2648	58 18 40	2632	56 40 29	2617
11	α Aquilæ	E.	113 8 7	3126	111 41 53	3167	110 15 4	3139	108 47 42	3114
	Pollux	W.	88 30 41	2584	90 9 58	2568	91 49 37	2553	93 29 37	2537
	Regulus	W.	51 33 12	2554	53 13 10	2537	54 53 32	2520	56 34 17	2504

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	41° 22' 10"	3337	42° 45' 50"	3337	44° 9' 19"	3345	45° 32' 38"	3353
	Pollux	E.	29 18 56	3296	27 53 18	3264	26 28 24	3306	25 4 20	3355
	Regulus	E.	65 7 8	2975	63 36 24	2985	62 5 52	2993	60 35 31	3002
2	Sun	W.	52 26 57	3391	53 49 24	3398	55 11 43	3404	56 33 55	3410
	Aldebaran	W.	27 12 57	3141	28 40 17	3136	30 7 43	3133	31 35 13	3130
	Regulus	E.	53 6 32	3045	51 37 15	3052	50 8 7	3060	48 39 9	3068
	Spica	E.	107 0 55	3018	105 31 5	3025	104 1 23	3031	102 31 49	3037
3	Sun	W.	63 23 24	3433	64 45 3	3436	66 6 39	3439	67 28 11	3442
	Aldebaran	W.	38 53 19	3194	40 21 0	3123	41 48 42	3123	43 16 24	3122
	Regulus	E.	41 16 28	3101	39 48 20	3107	38 20 19	3114	36 52 26	3119
	Spica	E.	95 5 34	3060	93 36 35	3063	92 7 40	3066	90 38 49	3069
4	Sun	W.	74 15 20	3446	75 36 44	3446	76 58 8	3446	78 19 33	3445
	Aldebaran	W.	50 35 13	3115	52 3 4	3114	53 30 57	3111	54 58 53	3108
	Regulus	E.	29 34 55	3153	28 7 49	3162	26 40 54	3171	25 14 10	3181
	Spica	E.	83 15 8	3073	81 46 26	3073	80 17 44	3073	78 49 2	3073
5	Sun	W.	85 7 14	3429	86 28 58	3424	87 50 47	3420	89 12 41	3414
	Aldebaran	W.	62 19 32	3090	63 47 54	3085	65 16 22	3079	66 44 57	3073
	Spica	E.	71 24 58	3059	69 55 58	3056	68 26 54	3051	66 57 44	3046
	Antares	E.	116 53 32	3066	115 24 41	3061	113 55 44	3056	112 26 41	3052
6	Sun	W.	96 4 1	3379	97 26 42	3370	98 49 33	3360	100 12 35	3351
	Aldebaran	W.	74 9 49	3039	75 39 14	3030	77 8 50	3022	78 38 36	3012
	Pollux	W.	33 0 56	2909	34 26 54	3187	35 53 19	3166	37 20 9	3145
	Spica	E.	59 30 10	3014	58 0 15	3006	56 30 10	2998	54 59 55	2989
	Antares	E.	104 59 39	3018	103 29 49	3010	101 59 49	3002	100 29 39	2993
7	Sun	W.	107 10 41	3296	108 34 57	3284	109 59 27	3271	111 24 12	3259
	Pollux	W.	44 40 10	3054	46 9 16	3036	47 38 44	3019	49 8 33	3003
	Spica	E.	47 25 48	2940	45 54 20	2930	44 22 39	2919	42 50 44	2907
	Antares	E.	92 55 49	2942	91 24 24	2931	89 52 45	2920	88 20 51	2908
8	Sun	W.	118 31 56	3188	119 58 19	3173	121 25 1	3158	122 52 1	3142
	Pollux	W.	56 42 51	2919	58 14 46	2902	59 47 2	2885	61 19 40	2869
	Spica	E.	35 7 19	2945	33 33 49	2932	32 0 3	2919	30 26 0	2906
	Antares	E.	80 37 24	2943	79 3 52	2929	77 30 2	2915	75 55 53	2901
9	Sun	W.	130 11 50	3060	131 40 48	3044	133 10 6	3027	134 39 45	3010
	Pollux	W.	69 8 15	2784	70 43 4	2767	72 18 15	2750	73 53 48	2733
	Regulus	W.	32 5 55	2781	33 40 48	2760	35 16 8	2739	36 51 56	2719
	Spica	E.	22 31 27	2741	20 55 41	2730	19 19 41	2719	17 43 27	2710
	Antares	E.	68 0 24	2725	66 24 18	2710	64 47 52	2695	63 11 5	2680
10	Pollux	W.	81 57 13	2649	83 35 2	2632	85 13 13	2616	86 51 46	2600
	Regulus	W.	44 57 21	2625	46 35 42	2607	48 14 28	2589	49 53 38	2572
	Antares	E.	55 1 57	2601	53 23 4	2585	51 43 49	2570	50 4 13	2554
	α Aquilæ	E.	107 19 49	3088	105 51 25	3064	104 22 31	3040	102 53 8	3018
11	Pollux	W.	95 9 59	2522	96 50 42	2507	98 31 45	2492	100 13 9	2478
	Regulus	W.	58 15 25	2487	59 56 56	2471	61 38 50	2455	63 21 7	2439

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
11	Antares E.	48° 24' 15"	9539	46° 43' 56"	9525	45° 3' 17"	9510	43° 22' 18"	9495
	α Aquilæ E.	101 23 18	9997	99 53 1	9976	98 22 18	9956	96 51 10	9936
12	Pollux W.	101 54 53	9465	103 36 56	9451	105 19 18	9438	107 1 58	9426
	Regulus W.	65 3 46	9494	66 46 46	9409	68 30 8	9395	70 13 50	9381
	Antares E.	34 52 26	9429	33 9 32	9417	31 26 22	9407	29 42 57	9397
	α Aquilæ E.	89 9 51	9856	87 36 36	9843	86 3 4	9831	84 29 16	9820
	Fomalhaut E.	115 22 10	9863	113 51 36	9853	112 20 24	9845	110 48 37	9836
13	Regulus W.	78 57 14	9316	80 42 50	9304	82 28 43	9293	84 14 53	9283
	Spica W.	24 53 44	9315	26 39 21	9301	28 25 19	9288	30 11 36	9277
	α Aquilæ E.	76 37 13	9783	75 2 23	9779	73 27 28	9778	71 52 31	9778
	Fomalhaut E.	103 1 54	9790	101 27 13	9779	99 52 9	9756	98 16 43	9741
14	Regulus W.	93 9 22	9237	94 56 55	9229	96 44 40	9223	98 32 35	9215
	Spica W.	39 7 6	9226	40 54 55	9217	42 42 57	9210	44 31 10	9202
	α Aquilæ E.	63 58 27	9804	62 24 4	9816	60 49 57	9831	59 16 9	9848
	Fomalhaut E.	90 15 11	9637	88 38 13	9673	87 1 5	9673	85 23 49	9689
	α Pegasi E.	109 49 28	9368	108 5 7	9357	106 20 31	9347	104 35 40	9336
	Mars E.	120 4 6	9492	118 22 41	9482	116 41 3	9473	114 59 12	9465
15	Regulus W.	107 34 21	9191	109 23 2	9188	111 11 48	9185	113 0 38	9183
	Spica W.	53 34 41	9174	55 23 47	9171	57 12 58	9168	59 2 14	9165
	α Aquilæ E.	51 34 7	9868	50 3 39	9899	48 34 2	9876	47 5 23	9890
	Fomalhaut E.	77 16 43	9669	75 39 21	9674	74 2 6	9681	72 25 0	9689
	α Pegasi E.	95 48 31	9305	94 2 39	9300	92 16 40	9297	90 30 36	9295
	Mars E.	106 27 26	9434	104 44 40	9430	103 1 48	9426	101 18 50	9423
16	Spica W.	68 9 21	9159	69 58 50	9159	71 48 19	9160	73 37 47	9161
	Antares W.	22 51 51	9909	24 40 5	9902	26 28 29	9197	28 17 1	9194
	α Aquilæ E.	40 1 17	9599	38 41 25	9646	37 23 40	9779	36 8 16	9831
	Fomalhaut E.	64 22 59	9757	62 47 35	9778	61 12 38	9801	59 38 12	9896
	α Pegasi E.	81 39 42	9393	79 53 32	9395	78 7 25	9397	76 21 21	9391
	Mars E.	92 43 13	9416	91 0 1	9417	89 16 50	9417	87 33 40	9419
	Venus E.	125 52 58	9065	124 1 5	9067	122 9 15	9069	120 17 28	9072
17	Spica W.	82 44 25	9174	84 33 32	9178	86 22 33	9182	88 11 27	9186
	Antares W.	37 20 20	9193	39 8 58	9195	40 57 33	9198	42 46 4	9201
	Fomalhaut E.	51 55 47	9009	50 25 45	9059	48 56 45	9114	47 28 52	9174
	α Pegasi E.	67 32 44	9331	65 47 29	9339	64 2 26	9346	62 17 37	9358
	Mars E.	78 58 35	9433	77 15 48	9438	75 33 7	9443	73 50 33	9448
	Venus E.	110 59 54	9092	109 8 43	9098	107 17 40	9103	105 26 46	9110
	Sun E.	131 47 18	9472	130 5 25	9475	128 23 37	9480	126 41 55	9484
18	Spica W.	97 14 7	9214	99 2 13	9220	100 50 10	9227	102 37 57	9235
	Antares W.	51 47 11	9294	53 35 3	9220	55 22 46	9237	57 10 19	9243
	Fomalhaut E.	40 30 21	9605	39 11 52	9736	37 55 32	9861	36 41 33	9916
	α Pegasi E.	53 37 41	9496	51 54 43	9443	50 12 10	9469	48 30 4	9499
	Mars E.	65 19 46	9480	63 38 5	9468	61 56 35	9497	60 15 17	9505
	Venus E.	96 14 45	9145	94 24 54	9153	92 35 15	9161	90 45 48	9169
	Sun E.	118 15 12	9513	116 34 17	9520	114 53 31	9526	113 12 54	9533
19	Spica W.	111 34 9	9272	113 20 49	9281	115 7 17	9289	116 53 33	9297

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXh.	P. L. of Diff.
11	Antares E.	41° 40' 58"	9481	39° 59' 18"	9467	38° 17' 19"	9455	36° 35' 2"	9441
	α Aquilæ E.	95 19 37	9918	93 47 41	9901	92 15 24	9886	90 42 47	9871
12	Pollux W.	108 44 55	9415	110 28 9	9403	112 11 40	9391	113 55 27	9389
	Regulus W.	71 57 52	9367	73 42 14	9354	75 26 55	9341	77 11 55	9328
	Antares E.	27 59 18	9388	26 15 26	9380	24 31 23	9375	22 47 12	9371
	α Aquilæ E.	82 55 14	9810	81 20 59	9801	79 46 33	9794	78 11 57	9788
	Fomalhaut E.	109 16 16	9873	107 43 23	9851	106 10 1	9839	104 36 11	9808
13	Regulus W.	86 1 18	9979	87 47 58	9969	89 34 52	9953	91 22 1	9945
	Spica W.	31 58 10	9265	33 45 1	9254	35 32 8	9244	37 19 30	9235
	α Aquilæ E.	70 17 34	9779	68 42 39	9769	67 7 48	9767	65 33 3	9764
	Fomalhaut E.	96 40 57	9797	95 4 53	9715	93 28 33	9704	91 51 58	9695
14	Regulus W.	100 20 40	9909	102 8 54	9904	103 57 16	9199	105 45 45	9194
	Spica W.	46 19 34	9196	48 8 8	9190	49 56 51	9184	51 45 42	9179
	α Aquilæ E.	57 42 43	9889	56 9 44	9889	54 37 15	9880	53 5 21	9851
	Fomalhaut E.	83 46 28	9666	82 9 3	9665	80 31 36	9665	78 54 9	9666
	α Pegasi E.	102 50 36	9330	101 5 20	9322	99 19 53	9315	97 34 16	9310
	Mars E.	113 17 10	9458	111 34 58	9451	109 52 36	9445	108 10 5	9439
15	Regulus W.	114 49 31	9189	116 38 26	9181	118 27 22	9181	120 16 18	9169
	Spica W.	60 51 34	9163	62 40 58	9161	64 30 24	9160	66 19 52	9159
	α Aquilæ E.	45 37 49	9190	44 11 28	9169	42 46 29	9168	41 23 2	9168
	Fomalhaut E.	70 48 5	9696	69 11 23	9710	67 34 56	9733	65 58 47	9739
	α Pegasi E.	88 44 29	9293	86 58 19	9291	85 12 7	9291	83 25 54	9291
	Mars E.	99 35 48	9490	97 52 42	9419	96 9 34	9417	94 26 24	9417
16	Spica W.	75 27 13	9163	77 16 37	9165	79 5 57	9168	80 55 13	9170
	Antares W.	30 5 38	9192	31 54 18	9191	33 42 59	9191	35 31 40	9192
	α Aquilæ E.	34 55 28	9108	33 45 34	9314	32 38 54	9352	31 35 48	9330
	Fomalhaut E.	58 4 20	9857	56 31 6	9889	54 58 33	9904	53 26 45	9904
	α Pegasi E.	74 35 23	9305	72 49 31	9310	71 3 46	9316	69 18 10	9323
	Mars E.	85 50 32	9490	84 7 26	9423	82 24 24	9436	80 41 27	9430
	Venus E.	118 25 46	9075	116 34 9	9079	114 42 37	9083	112 51 12	9088
17	Spica W.	90 0 15	9199	91 48 55	9196	93 37 28	9209	95 25 52	9208
	Antares W.	44 34 30	9205	46 22 50	9209	48 11 4	9214	49 59 11	9218
	Fomalhaut E.	46 2 12	9342	44 36 53	9318	43 13 2	9409	41 50 48	9497
	α Pegasi E.	60 33 2	9369	58 48 43	9369	57 4 42	9366	55 21 1	9410
	Mars E.	72 8 6	9453	70 25 47	9460	68 43 37	9467	67 1 37	9473
	Venus E.	103 36 2	9116	101 45 27	9132	99 55 2	9130	98 4 48	9137
	Sun E.	125 0 19	9469	123 18 50	9494	121 37 29	9500	119 56 16	9507
18	Spica W.	104 25 33	9242	106 12 58	9249	108 0 13	9256	109 47 17	9264
	Antares W.	58 57 43	9249	60 44 57	9256	62 32 1	9264	64 18 54	9270
	Fomalhaut E.	35 30 9	9192	34 21 35	9394	33 16 8	9396	32 14 6	9395
	α Pegasi E.	46 48 26	9505	45 7 20	9530	43 26 48	9556	41 46 52	9585
	Mars E.	58 34 11	9513	56 53 16	9522	55 12 34	9533	53 32 6	9543
	Venus E.	88 56 34	9178	87 7 34	9187	85 18 47	9196	83 30 13	9205
	Sun E.	111 32 27	9540	109 52 10	9548	108 12 4	9557	106 32 10	9566
19	Spica W.	118 39 37	9306	120 25 28	9315	122 11 6	9324	123 56 31	9333

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LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
19	Antares	W.	66° 5' 37"	2278	67° 52' 9"	2286	69° 38' 29"	2294	71° 24' 37"	2302
	α Pegasi	E.	40 7 37	2618	38 29 7	2655	36 51 27	2696	35 14 42	2743
	Mars	E.	51 51 52	2553	50 11 52	2563	48 32 6	2574	46 52 36	2586
	Venus	E.	81 41 53	2215	79 53 48	2225	78 5 57	2235	76 18 21	2245
	α Arietis	E.	81 42 28	2296	79 56 22	2304	78 10 29	2313	76 24 49	2322
	Sun	E.	104 52 28	2574	103 12 57	2582	101 33 37	2591	99 54 29	2599
20	Antares	W.	80 12 15	2345	81 57 9	2354	83 41 50	2362	85 26 19	2371
	α Aquilæ	W.	35 48 20	4001	36 59 59	3877	38 13 42	3769	39 20 16	3675
	Mars	E.	38 39 17	2652	37 1 32	2667	35 24 8	2684	33 47 6	2700
	Venus	E.	67 24 9	2297	65 38 5	2308	63 52 17	2319	62 6 45	2329
	α Arietis	E.	67 39 43	2368	65 55 22	2378	64 11 15	2388	62 27 23	2398
	Sun	E.	91 41 53	2646	90 4 0	2655	88 26 19	2664	86 48 51	2675
21	Antares	W.	94 5 28	2417	95 48 38	2426	97 31 36	2435	99 14 21	2445
	α Aquilæ	W.	46 8 26	3358	47 31 30	3316	48 55 23	3279	50 19 59	3247
	Venus	E.	53 23 4	2386	51 39 9	2398	49 55 31	2410	48 12 10	2421
	α Arietis	E.	53 51 44	2450	52 9 21	2462	50 27 14	2474	48 45 24	2486
	Sun	E.	78 44 48	2722	77 8 38	2733	75 32 42	2742	73 56 58	2752
22	Antares	W.	107 44 46	2491	109 26 12	2500	111 7 25	2510	112 48 25	2519
	α Aquilæ	W.	57 31 5	3137	58 58 30	3124	60 26 11	3111	61 54 7	3101
	Fomalhaut	W.	34 54 53	4354	36 0 56	4313	37 9 10	4290	38 19 21	3263
	Venus	E.	39 39 36	2482	37 57 58	2494	36 16 37	2507	34 35 34	2521
	α Arietis	E.	40 20 28	2549	38 40 23	2564	37 0 38	2578	35 21 13	2594
	Sun	E.	66 1 32	2801	64 27 5	2811	62 52 51	2821	61 18 50	2831
23	α Aquilæ	W.	69 16 9	3075	70 44 49	3073	72 13 32	3072	73 42 16	3073
	Fomalhaut	W.	44 33 14	3614	45 51 33	3564	47 10 47	3520	48 30 49	3481
	α Pegasi	W.	22 10 26	3656	23 28 0	3525	24 47 56	3419	26 9 51	3333
	Sun	E.	53 31 52	2879	51 59 6	2888	50 26 32	2898	48 54 10	2908
24	α Aquilæ	W.	81 5 23	3088	82 33 47	3093	84 2 5	3099	85 30 16	3106
	Fomalhaut	W.	55 26 18	3346	56 43 36	3298	58 7 15	3213	59 31 12	3200
	α Pegasi	W.	33 19 12	3084	34 47 41	3056	36 16 44	3033	37 46 16	3014
	Sun	E.	41 15 24	2955	39 44 15	2965	38 13 18	2974	36 42 33	2984
25	α Aquilæ	W.	92 48 51	3149	94 16 1	3159	95 42 59	3171	97 9 43	3183
	Fomalhaut	W.	66 34 8	3259	67 59 8	3254	69 24 13	3251	70 49 22	3249
	α Pegasi	W.	45 18 36	2980	46 49 39	2955	48 20 48	2951	49 52 2	2950
	Sun	E.	29 11 47	3031	27 42 13	3042	26 12 52	3052	24 43 43	3061
29	Sun	W.	17 6 17	3325	18 29 59	3332	19 53 34	3338	21 17 1	3345
	Regulus	E.	62 54 9	2986	61 23 39	2994	59 53 19	3002	58 23 9	3010
	Spica	E.	116 51 27	2965	115 20 31	2973	113 49 45	2981	112 19 8	2987
30	Sun	W.	28 12 20	3378	29 35 2	3384	30 57 37	3390	32 20 5	3395
	Regulus	E.	50 54 43	3048	49 25 20	3058	47 56 26	3062	46 27 30	3069
	Spica	E.	104 48 4	3018	103 18 14	3024	101 48 31	3030	100 18 55	3035
31	Sun	W.	39 10 57	3418	40 32 53	3423	41 54 44	3427	43 16 30	3431
	Regulus	E.	39 5 2	3105	37 36 59	3113	36 9 5	3120	34 41 20	3127
	Spica	E.	92 52 27	3058	91 23 26	3061	89 54 29	3065	88 25 36	3068

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
19	Antares	W.	73 10 33	2311	74 56 17	2319	76 41 49	2328	78 27 8	2336
	α Pegasi	E.	33 38 59	2795	32 4 24	2854	30 31 6	2923	28 59 16	3003
	Mars	E.	45 13 22	2599	43 34 25	2611	41 55 45	2694	40 17 22	2637
	Venus	E.	74 31 0	2255	72 43 54	2266	70 57 4	2276	69 10 29	2286
	α Arietis	E.	74 39 21	2331	72 54 6	2340	71 9 5	2349	69 24 17	2359
	Sun	E.	98 15 33	2606	96 36 49	2618	94 58 18	2626	93 19 59	2636
20	Antares	W.	87 10 35	2320	88 54 28	2329	90 38 28	2338	92 22 5	2408
	α Aquilæ	W.	40 46 30	3594	42 5 11	3594	43 25 9	3461	44 46 17	3407
	Mars	E.	32 10 26	2718	30 34 10	2738	28 58 21	2761	27 23 2	2785
	Venus	E.	60 21 28	2340	58 36 27	2352	56 51 43	2363	55 7 15	2375
	α Arietis	E.	60 43 46	2408	59 0 23	2419	57 17 15	2429	55 34 22	2440
	Sun	E.	85 11 37	2684	83 34 36	2693	81 57 47	2703	80 21 11	2713
21	Antares	W.	100 56 52	2454	102 39 10	2463	104 21 15	2473	106 3 7	2482
	α Aquilæ	W.	51 45 13	3219	53 11 0	3193	54 37 17	3179	56 4 0	3153
	Venus	E.	46 29 5	2433	44 46 17	2445	43 3 46	2457	41 21 32	2470
	α Arietis	E.	47 3 51	2497	45 22 34	2510	43 41 34	2522	42 0 52	2535
	Sun	E.	72 21 27	2762	70 46 9	2772	69 11 4	2782	67 36 12	2791
22	Antares	W.	114 29 12	2598	116 9 46	2538	117 50 7	2547	119 30 15	2556
	α Aquilæ	W.	63 22 15	3093	64 50 33	3087	66 18 59	3081	67 47 32	3078
	Fomalhaut	W.	39 31 17	3889	40 44 48	3806	41 59 44	3734	43 15 55	3670
	Venus	E.	32 54 50	2535	31 14 25	2549	29 34 20	2564	27 54 36	2580
	α Arietis	E.	33 42 10	2611	32 3 30	2629	30 25 15	2649	28 47 27	2671
	Sun	E.	59 45 2	2840	58 11 26	2849	56 38 2	2859	55 4 51	2869
23	α Aquilæ	W.	75 10 59	3073	76 39 41	3076	78 8 20	3080	79 36 54	3084
	Fomalhaut	W.	49 51 34	3447	51 12 57	3416	52 34 55	3390	53 57 23	3366
	α Pegasi	W.	27 33 24	3263	28 58 19	3204	30 24 23	3157	31 51 24	3118
	Sun	E.	47 22 1	2916	45 50 3	2927	44 18 18	2936	42 46 45	2946
24	α Aquilæ	W.	86 58 18	3114	88 26 11	3121	89 53 55	3129	91 21 29	3139
	Fomalhaut	W.	60 55 24	3288	62 19 50	3278	63 44 27	3270	65 9 14	3264
	α Pegasi	W.	39 16 11	2998	40 46 26	2985	42 16 57	2975	43 47 41	2966
	Sun	E.	35 12 0	2993	33 41 39	3003	32 11 30	3013	30 41 33	3022
25	α Aquilæ	W.	98 36 12	3196	100 2 26	3209	101 28 25	3223	102 54 7	3238
	Fomalhaut	W.	72 14 33	3249	73 39 44	3249	75 4 55	3250	76 30 5	3253
	α Pegasi	W.	51 23 18	2948	52 54 36	2948	54 25 54	2948	55 57 12	2949
	Sun	E.	23 14 46	3071	21 46 1	3069	20 17 29	3091	18 49 9	3102
29	Sun	W.	22 40 20	3352	24 3 31	3358	25 26 35	3365	26 49 31	3372
	Regulus	E.	56 53 9	3018	55 23 18	3096	53 53 37	3033	52 24 5	3041
	Spica	E.	110 48 39	2994	109 18 19	3000	107 48 6	3006	106 18 1	3013
30	Sun	W.	33 42 27	3400	35 4 43	3406	36 26 53	3411	37 48 57	3415
	Regulus	E.	44 58 43	3077	43 30 5	3063	42 1 35	3091	40 33 14	3098
	Spica	E.	98 49 26	3040	97 20 3	3044	95 50 45	3049	94 21 33	3054
31	Sun	W.	44 38 12	3433	45 59 51	3435	47 21 28	3438	48 43 2	3439
	Regulus	E.	33 13 43	3135	31 46 16	3143	30 18 59	3153	28 51 53	3163
	Spica	E.	86 56 47	3071	85 28 2	3073	83 59 19	3075	82 30 39	3077

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be subtracted from	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.		added to Apparent Time.	
Wed.	1	^h 4 ^m 38 ^s 0.89	10.240	N. 22° 6' 58.6	+20.02	15 48.28	68.44	^m 2 ^s 24.30	^s 0.383
Thur.	2	4 42 6.83	10.255	22 14 47.6	19.05	15 48.15	68.50	2 14.94	0.398
Frid.	3	4 46 13.13	10.270	22 22 13.2	18.08	15 48.03	68.55	2 5.22	0.413
Sat.	4	4 50 19.77	10.283	22 29 15.3	17.10	15 47.90	68.60	1 55.17	0.426
Sun.	5	4 54 26.74	10.296	22 35 53.9	16.11	15 47.79	68.64	1 44.79	0.439
Mon.	6	4 58 34.01	10.309	22 42 8.8	15.12	15 47.68	68.68	1 34.10	0.452
Tues.	7	5 2 41.57	10.320	22 47 59.8	14.12	15 47.57	68.72	1 23.12	0.463
Wed.	8	5 6 49.40	10.331	22 53 26.8	13.12	15 47.47	68.76	1 11.88	0.474
Thur.	9	5 10 57.48	10.341	22 58 29.8	12.11	15 47.37	68.79	1 0.39	0.484
Frid.	10	5 15 5.79	10.350	23 3 8.5	11.10	15 47.27	68.82	0 48.67	0.493
Sat.	11	5 19 14.32	10.359	23 7 22.9	10.08	15 47.18	68.85	0 36.73	0.502
Sun.	12	5 23 23.05	10.367	23 11 12.9	9.06	15 47.09	68.88	0 24.59	0.510
Mon.	13	5 27 31.96	10.374	23 14 38.5	8.04	15 47.00	68.91	0 12.27	0.517
Tues.	14	5 31 41.03	10.380	23 17 39.5	7.03	15 46.92	68.93	0 0.20	0.523
Wed.	15	5 35 50.24	10.386	23 20 15.8	6.00	15 46.84	68.95	0 12.82	0.529
Thur.	16	5 39 59.57	10.390	23 22 27.4	4.97	15 46.75	68.96	0 25.56	0.533
Frid.	17	5 44 9.02	10.394	23 24 14.3	3.94	15 46.68	68.97	0 38.42	0.537
Sat.	18	5 48 18.55	10.398	23 25 36.4	2.91	15 46.61	68.98	0 51.36	0.541
Sun.	19	5 52 28.14	10.400	23 26 33.7	1.87	15 46.54	68.98	1 4.35	0.543
Mon.	20	5 56 37.77	10.401	23 27 6.2	+0.84	15 46.48	68.98	1 17.38	0.544
Tues.	21	6 0 47.41	10.401	23 27 13.8	-0.20	15 46.42	68.98	1 30.43	0.544
Wed.	22	6 4 57.03	10.399	23 26 56.6	1.24	15 46.37	68.97	1 43.46	0.542
Thur.	23	6 9 6.61	10.397	23 26 14.5	2.27	15 46.33	68.96	1 56.44	0.540
Frid.	24	6 13 16.12	10.394	23 25 7.7	3.30	15 46.29	68.95	2 9.36	0.537
Sat.	25	6 17 25.55	10.389	23 23 36.0	4.33	15 46.25	68.93	2 22.20	0.532
Sun.	26	6 21 34.84	10.383	23 21 39.7	5.37	15 46.21	68.91	2 34.90	0.526
Mon.	27	6 25 43.99	10.377	23 19 18.7	6.39	15 46.19	68.90	2 47.45	0.520
Tues.	28	6 29 52.96	10.369	23 16 33.1	7.41	15 46.17	68.87	2 59.83	0.512
Wed.	29	6 34 1.74	10.360	23 13 23.0	8.43	15 46.15	68.84	3 12.03	0.503
Thur.	30	6 38 10.30	10.350	23 9 48.5	9.44	15 46 14	68.81	3 23.99	0.493
Frid.	31	6 42 18.59	10.340	N. 23 5 49.8	-10.45	15 46.14	68.77	3 35.69	0.483

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0.19 from the Sidereal Time.

+ prefixed to the hourly change of declination indicates that the north declinations are increasing;
— that they are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be added to	Diff. for 1 hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	subtracted from Mean Time.		
Wed.	1	^h 4 ^m 38 ^s 1.31	10.239	N. 22° 6' 59.4"	+20.02	^m 2 ^s 24.28	^s 0.383	^h 4 ^m 40 ^s 25.58
Thur.	2	4 42 7.22	10.254	22 14 48.3	19.05	2 14.92	0.398	4 44 22.14
Frid.	3	4 46 13.49	10.269	22 22 13.8	18.08	2 5.20	0.413	4 48 18.69
Sat.	4	4 50 20.10	10.282	22 29 15.9	17.10	1 55.15	0.426	4 52 15.25
Sun.	5	4 54 27.04	10.295	22 35 54.4	16.11	1 44.77	0.439	4 56 11.81
Mon.	6	4 58 34.28	10.308	22 42 9.2	15.12	1 34.09	0.452	5 0 8.37
Tues.	7	5 2 41.81	10.319	22 48 0.1	14.12	1 23.11	0.463	5 4 4.92
Wed.	8	5 6 49.61	10.330	22 53 27.1	13.12	1 11.87	0.474	5 8 1.48
Thur.	9	5 10 57.66	10.340	22 58 30.0	12.11	1 0.38	0.484	5 11 58.04
Frid.	10	5 15 5.94	10.349	23 3 8.7	11.10	0 48.66	0.493	5 15 54.60
Sat.	11	5 19 14.44	10.358	23 7 23.0	10.08	0 36.72	0.502	5 19 51.15
Sun.	12	5 23 23.13	10.366	23 11 13.0	9.06	0 24.58	0.510	5 23 47.71
Mon.	13	5 27 32.00	10.373	23 14 38.5	8.04	0 12.27	0.517	5 27 44.27
Tues.	14	5 31 41.03	10.379	23 17 39.5	7.03	0 0.20	0.523	5 31 40.83
Wed.	15	5 35 50.21	10.385	23 20 15.8	6.00	0 12.82	0.529	5 35 37.38
Thur.	16	5 39 59.50	10.389	23 22 27.4	4.97	0 25.56	0.533	5 39 33.94
Frid.	17	5 44 8.91	10.393	23 24 14.3	3.94	0 38.41	0.537	5 43 30.50
Sat.	18	5 48 18.41	10.397	23 25 36.4	2.91	0 51.35	0.541	5 47 27.06
Sun.	19	5 52 27.96	10.399	23 26 33.7	1.87	1 4.34	0.543	5 51 23.62
Mon.	20	5 56 37.55	10.400	23 27 6.2	+ 0.84	1 17.37	0.544	5 55 20.18
Tues.	21	6 0 47.15	10.400	23 27 13.8	- 0.20	1 30.42	0.544	5 59 16.73
Wed.	22	6 4 56.73	10.398	23 26 56.6	1.24	1 43.44	0.542	6 3 13.29
Thur.	23	6 9 6.27	10.396	23 26 14.6	2.27	1 56.42	0.540	6 7 9.85
Frid.	24	6 13 15.75	10.393	23 25 7.8	3.30	2 9.34	0.537	6 11 6.41
Sat.	25	6 17 25.14	10.388	23 23 36.2	4.33	2 22.18	0.532	6 15 2.96
Sun.	26	6 21 34.40	10.382	23 21 39.9	5.37	2 34.88	0.526	6 18 59.52
Mon.	27	6 25 43.51	10.376	23 19 19.0	6.39	2 47.43	0.520	6 22 56.08
Tues.	28	6 29 52.45	10.368	23 16 33.5	7.41	2 59.81	0.512	6 26 52.64
Wed.	29	6 34 1.19	10.359	23 13 23.5	8.43	3 12.00	0.503	6 30 49.19
Thur.	30	6 38 9.71	10.349	23 9 49.1	9.44	3 23.96	0.493	6 34 45.75
Frid.	31	6 42 17.97	10.339	N. 23 5 50.5	-10.45	3 35.66	0.483	6 38 42.31

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

+ prefixed to the hourly change of declination indicates that the north declinations are increasing;

— that they are decreasing.

Diff. for 1 hour,

+ 9^s.8565.

(Table III.)

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal $^{\circ}$.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ'						
1	152	71° 4' 44.5	4' 7.4	143.68	—0.83	0.0062413	+24.6	19 16 24.44	
2	153	72 2 12.2	1 34.9	143.63	0.91	.0062994	23.7	19 12 28.53	
3	154	72 59 38.6	59 1.1	143.58	0.98	.0063554	22.9	19 8 32.62	
4	155	73 57 3.9	56 26.2	143.53	0.99	.0064094	22.1	19 4 36.72	
5	156	74 54 28.1	53 50.2	143.48	0.99	.0064616	21.3	19 0 40.81	
6	157	75 51 51.1	51 13.1	143.43	0.96	.0065120	20.6	18 56 44.90	
7	158	76 49 13.0	48 34.8	143.39	0.91	.0065608	20.0	18 52 48.99	
8	159	77 46 33.9	45 55.5	143.35	0.82	.0066081	19.3	18 48 53.07	
9	160	78 43 53.9	43 15.3	143.32	0.73	.0066539	18.7	18 44 57.15	
10	161	79 41 13.1	40 34.4	143.28	0.65	.0066983	18.2	18 41 1.23	
11	162	80 38 31.5	37 52.7	143.25	0.47	.0067414	17.7	18 37 5.32	
12	163	81 35 49.1	35 10.1	143.22	0.34	.0067831	17.2	18 33 9.42	
13	164	82 33 6.0	32 26.8	143.19	0.22	.0068236	16.6	18 29 13.50	
14	165	83 30 22.4	29 43.0	143.17	—0.09	.0068626	16.0	18 25 17.59	
15	166	84 27 38.4	26 58.9	143.16	+0.01	.0069001	15.3	18 21 21.68	
16	167	85 24 54.0	24 14.3	143.14	0.07	.0069361	14.7	18 17 25.78	
17	168	86 22 9.3	21 29.4	143.13	0.12	.0069706	14.0	18 13 29.86	
18	169	87 19 24.4	18 44.3	143.12	0.12	.0070033	13.2	18 9 33.95	
19	170	88 16 39.4	15 59.1	143.12	0.12	.0070341	12.4	18 5 38.04	
20	171	89 13 54.3	13 13.8	143.11	+0.07	.0070630	11.5	18 1 42.13	
21	172	90 11 8.9	10 28.3	143.11	0.00	.0070897	10.6	17 57 46.21	
22	173	91 8 23.4	7 42.6	143.10	—0.10	.0071141	9.6	17 53 50.30	
23	174	92 5 37.8	4 56.8	143.10	0.20	.0071361	8.6	17 49 54.39	
24	175	93 2 52.1	2 10.9	143.10	0.32	.0071556	7.6	17 45 58.48	
25	176	93 60 6.3	59 25.0	143.09	0.45	.0071725	6.5	17 42 2.56	
26	177	94 57 20.3	56 38.8	143.09	0.58	.0071868	5.4	17 38 6.65	
27	178	95 54 34.1	53 52.4	143.08	0.71	.0071984	4.3	17 34 10.74	
28	179	96 51 47.7	51 5.8	143.06	0.82	.0072073	3.2	17 30 14.84	
29	180	97 49 1.0	48 18.9	143.05	0.91	.0072137	2.2	17 26 18.92	
30	181	98 46 14.1	45 31.9	143.04	0.98	.0072176	1.1	17 22 23.01	
31	182	99 43 26.9	42 44.6	143.03	—0.99	0.0072189	+ 0.1	17 18 27.10	
NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0 ^h 0 ^m 0 ^s .								Diff. for 1 hour, — 9 ^s .8296. (Table II.)	

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.

SEMIDIAMETER.

HORIZONTAL PARALLAX.

MERIDIAN PASSAGE.

AGE.

Noon.

Midnight.

Noon.

Diff. for
1 hour.

Midnight.

Diff. for
1 hour.Diff. for
1 hour.

Noon.

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.			
1	14 46.3	14 46.4	54 5.9	-0.03	54 6.5	+0.15	^h 3 ^m 35.9	^m 1.85	^d 4.5
2	14 47.2	14 48.6	54 9.4	+0.34	54 14.6	0.54	4 19.6	1.79	5.5
3	14 50.7	14 53.5	54 22.3	0.74	54 32.4	0.94	5 2.0	1.75	6.5
4	14 56.9	15 1.0	54 44.9	1.15	54 59.9	1.35	5 43.9	1.75	7.5
5	15 5.7	15 11.1	55 17.3	1.55	55 37.0	1.73	6 26.2	1.79	8.5
6	15 17.0	15 23.4	55 58.7	1.89	56 22.4	2.04	7 10.1	1.87	9.5
7	15 30.3	15 37.5	56 47.6	2.16	57 14.1	2.24	7 56.5	2.00	10.5
8	15 45.0	15 52.4	57 41.4	2.28	58 8.9	2.28	8 46.5	2.17	11.5
9	15 59.8	16 7.0	58 36.1	2.23	59 2.4	2.12	9 40.7	2.36	12.5
10	16 13.7	16 19.9	59 27.1	1.96	59 49.6	1.75	10 39.4	2.53	13.5
11	16 25.2	16 29.7	60 9.3	1.50	60 25.7	1.21	11 41.3	2.63	14.5
12	16 33.1	16 35.4	60 38.4	0.87	60 46.8	+0.52	12 44.6	2.62	15.5
13	16 36.6	16 36.6	60 51.1	+0.17	60 51.1	-0.17	13 46.6	2.53	16.5
14	16 35.5	16 33.3	60 47.0	-0.51	60 38.9	0.82	14 45.7	2.38	17.5
15	16 30.1	16 26.1	60 27.4	1.09	60 12.7	1.33	15 41.2	2.23	18.5
16	16 21.5	16 16.2	59 55.5	1.52	59 36.3	1.66	16 33.4	2.11	19.5
17	16 10.6	16 4.7	59 15.6	1.76	58 54.0	1.82	17 23.1	2.03	20.5
18	15 58.7	15 52.7	58 31.9	1.85	58 9.7	1.84	18 11.4	1.99	21.5
19	15 46.7	15 40.8	57 47.7	1.81	57 26.3	1.75	18 59.4	2.00	22.5
20	15 35.2	15 29.8	57 5.6	1.68	56 45.7	1.61	19 47.7	2.03	23.5
21	15 24.6	15 19.8	56 26.8	1.52	56 9.0	1.43	20 36.9	2.07	24.5
22	15 15.2	15 11.0	55 52.3	1.34	55 36.7	1.25	21 27.1	2.10	25.5
23	15 7.1	15 3.4	55 22.3	1.15	55 8.9	1.06	22 17.9	2.11	26.5
24	15 0.1	14 57.1	54 56.7	0.97	54 45.5	0.88	23 8.5	2.10	27.5
25	14 54.3	14 51.9	54 35.5	0.78	54 26.6	0.69	23 58.2	2.04	28.5
26	14 49.8	14 48.0	54 18.8	0.60	54 12.2	0.50	δ 46.4		29.5
27	14 46.5	14 45.4	54 6.8	0.40	54 2.6	0.28	0 46.4	1.96	0.9
28	14 44.6	14 44.3	53 59.9	-0.15	53 58.8	-0.03	1 32.6	1.88	1.9
29	14 44.5	14 45.0	53 59.2	+0.10	54 1.2	+0.25	2 16.9	1.81	2.9
30	14 46.1	14 47.7	54 5.1	0.41	54 11.0	0.58	2 59.5	1.75	3.9
31	14 49.8	14 52.6	54 18.9	0.76	54 29.1	0.94	3 41.1	1.72	4.9
32	14 55.9	14 59.9	54 41.4	+1.12	54 56.0	+1.31	4 22.7	1.74	5.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 1.					FRIDAY 3.				
0	8 9 50.50	1.9727	N. 16° 25' 25"	8.964	0	9 41 40.92	1.8698	N. 8° 41' 30.8"	10.812
1	8 11 48.77	1.9697	16 16 44.6	8.333	1	9 43 33.07	1.8688	8 30 41.0	10.849
2	8 13 46.86	1.9667	16 8 22.6	8.401	2	9 45 25.17	1.8678	8 19 48.9	10.887
3	8 15 44.78	1.9638	15 59 56.5	8.467	3	9 47 17.21	1.8669	8 8 54.5	10.925
4	8 17 42.52	1.9609	15 51 26.5	8.532	4	9 49 9.20	1.8661	7 57 57.9	10.961
5	8 19 40.09	1.9580	15 42 52.6	8.597	5	9 51 1.14	1.8653	7 46 59.2	10.997
6	8 21 37.48	1.9551	15 34 14.8	8.662	6	9 52 53.03	1.8645	7 35 58.3	11.032
7	8 23 34.70	1.9523	15 25 33.2	8.726	7	9 54 44.88	1.8638	7 24 55.3	11.067
8	8 25 31.75	1.9495	15 16 47.7	8.790	8	9 56 36.69	1.8632	7 13 50.3	11.101
9	8 27 28.64	1.9467	15 7 58.4	8.852	9	9 58 28.46	1.8626	7 2 43.2	11.135
10	8 29 25.36	1.9440	14 59 5.4	8.914	10	10 0 20.20	1.8621	6 51 34.1	11.168
11	8 31 21.92	1.9413	14 50 8.7	8.975	11	10 2 11.91	1.8616	6 40 23.1	11.200
12	8 33 18.32	1.9387	14 41 8.4	9.036	12	10 4 3.59	1.8612	6 29 10.1	11.232
13	8 35 14.56	1.9360	14 32 4.4	9.096	13	10 5 55.25	1.8608	6 17 55.2	11.263
14	8 37 10.64	1.9333	14 22 56.9	9.155	14	10 7 46.80	1.8605	6 6 38.5	11.293
15	8 39 6.56	1.9307	14 13 45.8	9.214	15	10 9 38.51	1.8603	5 55 20.0	11.323
16	8 41 2.33	1.9282	14 4 31.2	9.273	16	10 11 30.12	1.8602	5 43 59.7	11.353
17	8 42 57.95	1.9257	13 55 13.1	9.331	17	10 13 21.73	1.8601	5 32 37.7	11.382
18	8 44 53.42	1.9233	13 45 51.5	9.388	18	10 15 13.33	1.8600	5 21 13.9	11.410
19	8 46 48.75	1.9209	13 36 26.5	9.444	19	10 17 4.93	1.8600	5 9 48.5	11.437
20	8 48 43.93	1.9185	13 26 58.2	9.495	20	10 18 56.53	1.8600	4 58 21.4	11.465
21	8 50 38.97	1.9162	13 17 26.6	9.554	21	10 20 48.13	1.8602	4 46 52.7	11.492
22	8 52 33.87	1.9138	13 7 51.7	9.608	22	10 22 39.75	1.8604	4 35 22.4	11.517
23	8 54 28.63	1.9116	N. 12° 58' 13.6"	9.662	23	10 24 31.38	1.8606	N. 4° 23' 50.6"	11.542
THURSDAY 2.					SATURDAY 4.				
0	8 56 23.26	1.9094	N. 12° 48' 32.2"	9.716	0	10 26 23.02	1.8608	N. 4° 12' 17.3"	11.567
1	8 58 17.75	1.9072	12 38 47.7	9.769	1	10 28 14.68	1.8612	4 0 42.5	11.592
2	9 0 12.12	1.9051	12 29 0.0	9.821	2	10 30 6.37	1.8617	3 49 6.3	11.615
3	9 2 6.36	1.9029	12 19 9.2	9.872	3	10 31 58.09	1.8622	3 37 28.7	11.637
4	9 4 0.47	1.9008	12 9 15.4	9.923	4	10 33 49.84	1.8628	3 25 49.8	11.660
5	9 5 54.46	1.8989	11 59 18.5	9.973	5	10 35 41.63	1.8635	3 14 9.5	11.682
6	9 7 48.34	1.8970	11 49 18.6	10.022	6	10 37 33.46	1.8642	3 2 27.9	11.703
7	9 9 42.10	1.8951	11 39 15.8	10.071	7	10 39 25.33	1.8648	2 50 45.1	11.723
8	9 11 35.75	1.8932	11 29 10.1	10.119	8	10 41 17.24	1.8656	2 39 1.1	11.743
9	9 13 29.28	1.8913	11 19 1.5	10.167	9	10 43 9.20	1.8665	2 27 15.9	11.763
10	9 15 22.70	1.8895	11 8 50.1	10.214	10	10 45 1.22	1.8675	2 15 29.5	11.782
11	9 17 16.02	1.8878	10 58 35.8	10.262	11	10 46 53.30	1.8685	2 3 42.1	11.799
12	9 19 9.24	1.8862	10 48 18.7	10.308	12	10 48 45.44	1.8695	1 51 53.6	11.816
13	9 21 2.36	1.8845	10 37 58.9	10.353	13	10 50 37.64	1.8707	1 40 4.1	11.833
14	9 22 55.38	1.8828	10 27 36.4	10.397	14	10 52 29.92	1.8719	1 28 13.6	11.850
15	9 24 48.30	1.8813	10 17 11.3	10.441	15	10 54 22.27	1.8732	1 16 22.1	11.865
16	9 26 41.14	1.8799	10 6 43.5	10.485	16	10 56 14.70	1.8745	1 4 29.8	11.879
17	9 28 33.89	1.8784	9 56 13.1	10.528	17	10 58 7.21	1.8759	0 52 36.6	11.894
18	9 30 26.55	1.8770	9 45 40.2	10.570	18	10 59 59.81	1.8774	0 40 42.5	11.908
19	9 32 19.13	1.8757	9 35 4.7	10.612	19	11 1 52.50	1.8789	0 28 47.6	11.921
20	9 34 11.63	1.8744	9 24 26.8	10.653	20	11 3 45.28	1.8805	0 16 52.0	11.933
21	9 36 4.06	1.8732	9 13 46.4	10.693	21	11 5 38.16	1.8822	N. 0 4 55.7	11.944
22	9 37 56.41	1.8720	9 3 3.6	10.733	22	11 7 31.14	1.8839	S. 0 7 1.3	11.955
23	9 39 48.70	1.8709	8 52 18.4	10.773	23	11 9 24.23	1.8857	0 18 58.9	11.966
24	9 41 40.92	1.8698	N. 8° 41' 30.8"	10.812	24	11 11 17.43	1.8876	S. 0 30 57.2	11.976

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 5.					TUESDAY 7.				
0	^h 11 ^m 11 ^s 17.43	1.8876	S. 0° 30' 57.2"	11.976	0	^h 12 ^m 45 ^s 21.12	2.0581	S. 10° 2' 18.2"	11.501
1	11 13 10.74	1.8895	0 42 56.0	11.984	1	12 47 24.76	2.0633	10 13 47.3	11.468
2	11 15 4.17	1.8915	0 54 55.3	11.993	2	12 49 28.72	2.0686	10 25 14.4	11.434
3	11 16 57.72	1.8936	1 6 55.0	11.999	3	12 51 32.99	2.0739	10 36 39.4	11.399
4	11 18 51.40	1.8957	1 18 55.2	12.007	4	12 53 37.58	2.0792	10 48 2.3	11.363
5	11 20 45.21	1.8979	1 30 55.8	12.013	5	12 55 42.50	2.0847	10 59 23.0	11.326
6	11 22 39.15	1.9002	1 42 56.7	12.018	6	12 57 47.75	2.0902	11 10 41.4	11.287
7	11 24 33.23	1.9026	1 54 57.9	12.023	7	12 59 53.33	2.0956	11 21 57.5	11.247
8	11 26 27.46	1.9050	2 6 59.3	12.028	8	13 1 59.25	2.1015	11 33 11.1	11.207
9	11 28 21.83	1.9074	2 19 1.0	12.032	9	13 4 5.51	2.1072	11 44 22.3	11.166
10	11 30 16.35	1.9100	2 31 2.8	12.036	10	13 6 12.11	2.1129	11 55 30.9	11.122
11	11 32 11.03	1.9127	2 43 4.8	12.034	11	13 8 19.06	2.1188	12 6 36.9	11.077
12	11 34 5.87	1.9153	2 55 6.9	12.035	12	13 10 26.36	2.1247	12 17 40.2	11.032
13	11 36 0.87	1.9181	3 7 9.0	12.035	13	13 12 34.02	2.1306	12 28 40.7	10.985
14	11 37 55.04	1.9209	3 19 11.1	12.034	14	13 14 42.03	2.1365	12 39 38.4	10.937
15	11 39 51.38	1.9237	3 31 13.1	12.032	15	13 16 50.40	2.1426	12 50 33.1	10.887
16	11 41 46.89	1.9267	3 43 15.0	12.031	16	13 18 59.14	2.1487	13 1 24.8	10.837
17	11 43 42.59	1.9296	3 55 16.8	12.028	17	13 21 8.24	2.1548	13 12 13.5	10.785
18	11 45 38.47	1.9322	4 7 18.4	12.025	18	13 23 17.71	2.1610	13 22 59.0	10.732
19	11 47 34.54	1.9361	4 19 19.8	12.020	19	13 25 27.56	2.1673	13 33 41.3	10.677
20	11 49 30.80	1.9393	4 31 20.8	12.014	20	13 27 37.78	2.1735	13 44 20.2	10.620
21	11 51 27.26	1.9427	4 43 21.5	12.008	21	13 29 48.38	2.1798	13 54 55.7	10.563
22	11 53 23.92	1.9461	4 55 21.8	12.001	22	13 31 59.36	2.1862	14 5 27.8	10.505
23	11 55 20.79	1.9495	S. 5° 7' 21.6"	11.993	23	13 34 10.73	2.1927	S. 14° 15' 56.3"	10.445
MONDAY 6.					WEDNESDAY 8.				
0	11 57 17.86	1.9530	S. 5° 19' 21.0"	11.985	0	13 36 22.48	2.1991	S. 14° 26' 21.2"	10.384
1	11 59 15.15	1.9566	5 31 19.8	11.975	1	13 38 34.62	2.2057	14 36 42.4	10.322
2	12 1 12.66	1.9603	5 43 18.0	11.965	2	13 40 47.16	2.2122	14 46 59.8	10.258
3	12 3 10.38	1.9639	5 55 15.6	11.954	3	13 43 0.09	2.2188	14 57 13.3	10.192
4	12 5 8.33	1.9678	6 7 12.5	11.942	4	13 45 13.42	2.2254	15 7 22.8	10.125
5	12 7 6.51	1.9717	6 19 8.6	11.929	5	13 47 27.14	2.2320	15 17 28.3	10.057
6	12 9 4.93	1.9756	6 31 4.0	11.916	6	13 49 41.26	2.2387	15 27 29.6	9.987
7	12 11 3.58	1.9796	6 42 58.5	11.901	7	13 51 55.79	2.2455	15 37 26.7	9.916
8	12 13 2.48	1.9837	6 54 52.1	11.885	8	13 54 10.72	2.2523	15 47 19.5	9.843
9	12 15 1.62	1.9878	7 6 44.7	11.867	9	13 56 26.06	2.2591	15 57 7.9	9.769
10	12 17 1.01	1.9920	7 18 36.2	11.850	10	13 58 41.81	2.2659	16 6 51.8	9.694
11	12 19 0.66	1.9963	7 30 26.7	11.833	11	14 0 57.97	2.2728	16 16 31.2	9.618
12	12 21 0.57	2.0007	7 42 16.1	11.813	12	14 3 14.54	2.2797	16 26 6.0	9.540
13	12 23 0.74	2.0051	7 54 4.3	11.792	13	14 5 31.53	2.2866	16 35 36.0	9.460
14	12 25 1.18	2.0096	8 5 51.2	11.771	14	14 7 48.93	2.2934	16 45 1.2	9.378
15	12 27 1.89	2.0141	8 17 36.8	11.749	15	14 10 6.74	2.3003	16 54 21.4	9.295
16	12 29 2.87	2.0187	8 29 21.1	11.726	16	14 12 24.97	2.3073	17 3 36.6	9.211
17	12 31 4.13	2.0234	8 41 3.9	11.701	17	14 14 43.62	2.3143	17 12 46.7	9.125
18	12 33 5.68	2.0282	8 52 45.2	11.676	18	14 17 2.69	2.3213	17 21 51.6	9.037
19	12 35 7.51	2.0329	9 4 25.0	11.649	19	14 19 22.18	2.3283	17 30 51.2	8.948
20	12 37 9.63	2.0378	9 16 3.1	11.622	20	14 21 42.09	2.3352	17 39 45.4	8.858
21	12 39 12.05	2.0428	9 27 39.6	11.593	21	14 24 2.41	2.3422	17 48 34.2	8.767
22	12 41 14.77	2.0478	9 39 14.3	11.563	22	14 26 23.16	2.3493	17 57 17.4	8.673
23	12 43 17.79	2.0529	9 50 47.2	11.532	23	14 28 44.33	2.3563	18 5 55.0	8.578
24	12 45 21.12	2.0581	S. 10° 2' 18.2"	11.501	24	14 31 5.92	2.3633	S. 18° 14' 26.8"	8.482

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 9.					SATURDAY 11.				
0	14 31 5.92	2.3633	S. 18° 14' 26.8"	8.489	0	16 31 58.19	2.6460	S. 22° 41' 58.0"	2.141
1	14 33 27.93	2.3703	18 22 52.8	8.384	1	16 34 37.08	2.6496	22 44 1.6	1.979
2	14 35 50.36	2.3774	18 31 12.9	8.284	2	16 37 16.14	2.6531	22 45 55.5	1.817
3	14 38 13.22	2.3845	18 39 26.9	8.183	3	16 39 55.43	2.6564	22 47 39.6	1.653
4	14 40 36.50	2.3914	18 47 34.8	8.081	4	16 42 34.91	2.6596	22 49 13.9	1.489
5	14 43 0.19	2.3983	18 55 36.6	7.977	5	16 45 14.58	2.6626	22 50 38.3	1.325
6	14 45 24.30	2.4053	19 3 32.0	7.870	6	16 47 54.42	2.6654	22 51 52.9	1.160
7	14 47 48.83	2.4122	19 11 21.0	7.763	7	16 50 34.43	2.6682	22 52 57.5	0.993
8	14 50 13.77	2.4192	19 19 3.6	7.655	8	16 53 14.60	2.6708	22 53 52.1	0.827
9	14 52 39.13	2.4261	19 26 39.6	7.544	9	16 55 54.93	2.6733	22 54 36.8	0.661
10	14 55 4.90	2.4330	19 34 8.9	7.432	10	16 58 35.40	2.6756	22 55 11.4	0.493
11	14 57 31.09	2.4399	19 41 31.4	7.318	11	17 1 15.60	2.6777	22 55 35.9	0.325
12	14 59 57.69	2.4467	19 48 47.1	7.203	12	17 3 56.73	2.6797	22 55 50.4	-0.157
13	15 2 24.70	2.4535	19 55 55.8	7.087	13	17 6 37.57	2.6816	22 55 54.8	+0.012
14	15 4 52.11	2.4602	20 2 57.5	6.969	14	17 9 18.52	2.6833	22 55 49.0	0.182
15	15 7 19.92	2.4668	20 9 52.1	6.850	15	17 11 59.57	2.6849	22 55 33.0	0.351
16	15 9 48.13	2.4735	20 16 39.5	6.728	16	17 14 40.71	2.6862	22 55 6.9	0.520
17	15 12 16.74	2.4802	20 23 19.5	6.605	17	17 17 21.92	2.6874	22 54 30.6	0.690
18	15 14 45.75	2.4868	20 29 52.1	6.481	18	17 20 3.20	2.6885	22 53 44.1	0.860
19	15 17 15.15	2.4933	20 36 17.2	6.356	19	17 22 44.54	2.6895	22 52 47.4	1.030
20	15 19 44.94	2.4997	20 42 34.8	6.229	20	17 25 25.94	2.6903	22 51 40.5	1.200
21	15 22 15.11	2.5060	20 48 44.7	6.101	21	17 28 7.37	2.6908	22 50 23.4	1.370
22	15 24 45.66	2.5123	20 54 46.9	5.971	22	17 30 48.83	2.6913	22 48 56.1	1.540
23	15 27 16.59	2.5187	S. 21° 0' 41.2"	5.838	23	17 33 30.32	2.6916	S. 22° 47' 18.6"	1.711
FRIDAY 10.					SUNDAY 12.				
0	15 29 47.90	2.5249	S. 21° 6' 27.5"	5.705	0	17 36 11.82	2.6917	S. 22° 45' 30.8"	1.882
1	15 32 19.58	2.5310	21 12 5.8	5.579	1	17 38 53.32	2.6917	22 43 32.8	2.051
2	15 34 51.62	2.5370	21 17 36.1	5.457	2	17 41 34.82	2.6915	22 41 24.7	2.220
3	15 37 24.02	2.5430	21 22 58.2	5.299	3	17 44 16.30	2.6912	22 39 6.4	2.390
4	15 39 56.78	2.5490	21 28 12.0	5.161	4	17 46 57.76	2.6907	22 36 37.9	2.559
5	15 42 29.90	2.5548	21 33 17.5	5.022	5	17 49 39.18	2.6900	22 33 59.3	2.728
6	15 45 3.36	2.5605	21 38 14.6	4.881	6	17 52 20.56	2.6899	22 31 10.5	2.897
7	15 47 37.16	2.5662	21 43 3.2	4.738	7	17 55 1.89	2.6893	22 28 11.6	3.066
8	15 50 11.30	2.5718	21 47 43.2	4.594	8	17 57 43.16	2.6879	22 25 2.6	3.234
9	15 52 45.77	2.5772	21 52 14.5	4.449	9	18 0 24.35	2.6859	22 21 43.6	3.401
10	15 55 20.56	2.5825	21 56 37.1	4.303	10	18 3 5.46	2.6845	22 18 14.5	3.567
11	15 57 55.67	2.5878	22 0 50.9	4.156	11	18 5 46.49	2.6830	22 14 35.5	3.733
12	16 0 31.10	2.5930	22 4 55.8	4.007	12	18 8 27.42	2.6813	22 10 46.5	3.900
13	16 3 6.83	2.5980	22 8 51.7	3.857	13	18 11 8.25	2.6795	22 6 47.5	4.065
14	16 5 42.86	2.6030	22 12 38.7	3.707	14	18 13 48.96	2.6775	22 2 38.7	4.229
15	16 8 19.19	2.6078	22 16 16.6	3.555	15	18 16 29.55	2.6754	21 58 20.0	4.393
16	16 10 55.80	2.6125	22 19 45.3	3.402	16	18 19 10.01	2.6732	21 53 51.5	4.557
17	16 13 32.69	2.6172	22 23 4.8	3.248	17	18 21 50.33	2.6708	21 49 13.2	4.719
18	16 16 9.86	2.6217	22 26 15.0	3.093	18	18 24 30.51	2.6683	21 44 25.2	4.881
19	16 18 47.29	2.6260	22 29 15.9	2.936	19	18 27 10.53	2.6657	21 39 27.5	5.042
20	16 21 24.98	2.6303	22 32 7.3	2.778	20	18 29 50.39	2.6629	21 34 20.2	5.201
21	16 24 2.93	2.6345	22 34 49.3	2.621	21	18 32 30.08	2.6600	21 29 3.4	5.359
22	16 26 41.12	2.6384	22 37 21.8	2.462	22	18 35 9.59	2.6570	21 23 37.1	5.517
23	16 29 19.54	2.6422	22 39 44.7	2.302	23	18 37 48.92	2.6538	21 18 1.3	5.675
24	16 31 58.19	2.6460	S. 22° 41' 58.0"	2.141	24	18 40 28.05	2.6505	S. 21° 12' 16.1"	5.831

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 13.					WEDNESDAY 15.				
0	18 40 28.05	2.6505	S. 21° 12' 16.1"	5.831	0	20 42 19.14	2.4080	S. 13° 58' 31.8"	11.635
1	18 43 6.98	2.6479	21 6 21.6	5.985	1	20 44 43.45	2.4023	13 46 51.3	11.715
2	18 45 45.71	2.6437	21 0 17.9	6.139	2	20 47 7.42	2.3967	13 35 6.0	11.794
3	18 48 24.22	2.6400	20 54 4.9	6.299	3	20 49 31.05	2.3910	13 23 16.0	11.871
4	18 51 2.51	2.6363	20 47 42.8	6.443	4	20 51 54.34	2.3853	13 11 21.5	11.946
5	18 53 40.58	2.6325	20 41 11.7	6.593	5	20 54 17.29	2.3797	12 59 22.5	12.019
6	18 56 18.41	2.6285	20 34 31.6	6.743	6	20 56 39.91	2.3742	12 47 19.2	12.090
7	18 58 56.00	2.6245	20 27 42.6	6.891	7	20 59 2.20	2.3687	12 35 11.7	12.160
8	19 1 33.35	2.6204	20 20 44.7	7.037	8	21 1 24.15	2.3631	12 23 0.0	12.228
9	19 4 10.45	2.6162	20 13 38.1	7.182	9	21 3 45.77	2.3577	12 10 44.3	12.294
10	19 6 47.29	2.6118	20 6 22.9	7.326	10	21 6 7.07	2.3522	11 58 24.7	12.359
11	19 9 23.87	2.6074	19 58 59.0	7.469	11	21 8 28.04	2.3467	11 46 1.2	12.422
12	19 12 0.18	2.6028	19 51 26.6	7.610	12	21 10 48.68	2.3413	11 33 34.0	12.483
13	19 14 36.21	2.5983	19 43 45.8	7.750	13	21 13 9.00	2.3360	11 21 3.2	12.543
14	19 17 11.97	2.5937	19 35 56.6	7.888	14	21 15 29.00	2.3307	11 8 28.8	12.601
15	19 19 47.45	2.5889	19 27 59.2	8.025	15	21 17 48.69	2.3255	10 55 51.1	12.656
16	19 22 22.64	2.5841	19 19 53.6	8.161	16	21 20 8.06	2.3203	10 43 10.1	12.711
17	19 24 57.54	2.5792	19 11 39.9	8.295	17	21 22 27.12	2.3151	10 30 25.8	12.764
18	19 27 32.14	2.5742	19 3 18.2	8.427	18	21 24 45.87	2.3099	10 17 38.4	12.815
19	19 30 6.44	2.5692	18 54 48.6	8.558	19	21 27 4.31	2.3048	10 4 48.0	12.864
20	19 32 40.44	2.5641	18 46 11.2	8.687	20	21 29 22.45	2.2997	9 51 54.7	12.912
21	19 35 14.13	2.5589	18 37 26.1	8.815	21	21 31 40.28	2.2947	9 38 58.5	12.959
22	19 37 47.51	2.5537	18 28 33.4	8.942	22	21 33 57.82	2.2896	9 25 59.6	13.003
23	19 40 20.58	2.5485	S. 18 19 33.1	9.067	23	21 36 15.06	2.2849	S. 9 12 58.1	13.046
TUESDAY 14.					THURSDAY 16.				
0	19 42 53.33	2.5439	S. 18 10 25.4	9.190	0	21 38 32.01	2.2801	S. 8 59 54.1	13.087
1	19 45 25.76	2.5378	18 1 10.3	9.312	1	21 40 48.67	2.2753	8 46 47.6	13.127
2	19 47 57.87	2.5324	17 51 48.0	9.431	2	21 43 5.04	2.2705	8 33 38.8	13.165
3	19 50 29.65	2.5269	17 42 18.6	9.549	3	21 45 21.13	2.2658	8 20 27.8	13.202
4	19 53 1.10	2.5214	17 32 42.1	9.666	4	21 47 36.94	2.2612	8 7 14.6	13.237
5	19 55 32.22	2.5160	17 22 58.7	9.780	5	21 49 52.48	2.2567	7 53 59.3	13.271
6	19 58 3.02	2.5105	17 13 8.5	9.893	6	21 52 7.74	2.2521	7 40 42.1	13.302
7	20 0 33.48	2.5049	17 3 11.5	10.005	7	21 54 22.73	2.2477	7 27 23.0	13.333
8	20 3 3.60	2.4992	16 53 7.9	10.114	8	21 56 37.46	2.2432	7 14 2.1	13.362
9	20 5 33.38	2.4936	16 42 57.8	10.222	9	21 58 51.92	2.2388	7 0 39.5	13.390
10	20 8 2.83	2.4880	16 32 41.2	10.329	10	22 1 6.12	2.2346	6 47 15.3	13.417
11	20 10 31.94	2.4823	16 22 18.3	10.434	11	22 3 20.07	2.2303	6 33 49.5	13.444
12	20 13 0.71	2.4767	16 11 49.1	10.537	12	22 5 33.76	2.2261	6 20 22.3	13.464
13	20 15 29.14	2.4709	16 1 13.8	10.638	13	22 7 47.20	2.2220	6 6 53.8	13.486
14	20 17 57.22	2.4652	15 50 32.5	10.737	14	22 10 0.40	2.2181	5 53 24.0	13.506
15	20 20 24.96	2.4594	15 39 45.3	10.835	15	22 12 13.37	2.2142	5 39 53.1	13.524
16	20 22 52.35	2.4537	15 28 52.3	10.931	16	22 14 26.10	2.2103	5 26 21.1	13.542
17	20 25 19.40	2.4480	15 17 53.6	11.025	17	22 16 38.60	2.2064	5 12 48.1	13.557
18	20 27 46.11	2.4422	15 6 49.3	11.117	18	22 18 50.87	2.2026	4 59 14.3	13.571
19	20 30 12.47	2.4365	14 55 39.5	11.208	19	22 21 2.91	2.1988	4 45 39.6	13.584
20	20 32 38.49	2.4308	14 44 24.3	11.297	20	22 23 14.73	2.1952	4 32 4.2	13.596
21	20 35 4.17	2.4251	14 33 3.9	11.384	21	22 25 26.33	2.1915	4 18 28.1	13.607
22	20 37 29.50	2.4193	14 21 38.3	11.470	22	22 27 37.71	2.1879	4 4 51.4	13.616
23	20 39 54.49	2.4137	14 10 7.5	11.554	23	22 29 48.88	2.1845	3 51 14.2	13.622
24	20 42 19.14	2.4080	S. 13 58 31.8	11.635	24	22 31 59.85	2.1812	S. 3 37 36.7	13.627

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 17.					SUNDAY 19.				
0	22 31 59.85	2.1812	S. 3 37 36.7	13.627	0	0 14 3.71	2.0964	N. 7 0 32.9	12.537
1	22 34 10.62	2.1778	3 23 58.9	13.632	1	0 16 9.49	2.0969	7 13 3.7	12.469
2	22 36 21.19	2.1746	3 10 20.8	13.637	2	0 18 15.26	2.0961	7 25 31.6	12.440
3	22 38 31.57	2.1714	2 56 42.4	13.640	3	0 20 21.02	2.0959	7 37 56.5	12.390
4	22 40 41.76	2.1683	2 43 4.0	13.640	4	0 22 26.77	2.0958	7 50 18.4	12.339
5	22 42 51.77	2.1653	2 29 25.6	13.640	5	0 24 32.51	2.0957	8 2 37.2	12.287
6	22 45 1.60	2.1623	2 15 47.2	13.638	6	0 26 38.25	2.0958	8 14 52.8	12.234
7	22 47 11.25	2.1593	2 2 9.0	13.635	7	0 28 44.00	2.0959	8 27 5.3	12.181
8	22 49 20.72	2.1564	1 48 31.0	13.631	8	0 30 49.76	2.0960	8 39 14.5	12.126
9	22 51 30.02	2.1537	1 34 53.3	13.626	9	0 32 55.52	2.0962	8 51 20.4	12.071
10	22 53 39.16	2.1510	1 21 15.9	13.619	10	0 35 1.30	2.0965	9 3 23.0	12.015
11	22 55 48.14	2.1483	1 7 39.0	13.611	11	0 37 7.10	2.0967	9 15 22.2	11.958
12	22 57 56.96	2.1457	0 54 2.6	13.602	12	0 39 12.91	2.0970	9 27 18.0	11.901
13	23 0 5.63	2.1432	0 40 26.8	13.592	13	0 41 18.74	2.0974	9 39 10.3	11.842
14	23 2 14.15	2.1408	0 26 51.6	13.580	14	0 43 24.60	2.0978	9 50 59.0	11.782
15	23 4 22.53	2.1385	S. 0 13 17.2	13.567	15	0 45 30.48	2.0983	10 2 44.1	11.722
16	23 6 30.77	2.1362	N. 0 0 16.4	13.559	16	0 47 36.39	2.0988	10 14 25.6	11.660
17	23 8 38.87	2.1339	0 13 49.1	13.537	17	0 49 42.34	2.0994	10 26 3.3	11.598
18	23 10 46.84	2.1317	0 27 20.9	13.522	18	0 51 48.32	2.1000	10 37 37.3	11.535
19	23 12 54.68	2.1296	0 40 51.7	13.504	19	0 53 54.34	2.1006	10 49 7.5	11.471
20	23 15 2.39	2.1275	0 54 21.4	13.485	20	0 56 0.40	2.1019	11 0 33.8	11.406
21	23 17 9.98	2.1256	1 7 49.9	13.466	21	0 58 6.49	2.1019	11 11 56.2	11.341
22	23 19 17.46	2.1237	1 21 17.3	13.446	22	1 0 12.63	2.1037	11 23 14.7	11.275
23	23 21 24.83	2.1218	N. 1 34 43.4	13.423	23	1 2 18.82	2.1036	N. 11 34 29.2	11.207
SATURDAY 18.					MONDAY 20.				
0	23 23 32.08	2.1200	N. 1 48 8.1	13.400	0	1 4 25.06	2.1044	N. 11 45 39.6	11.139
1	23 25 39.23	2.1183	2 1 31.4	13.377	1	1 6 31.35	2.1053	11 56 45.9	11.071
2	23 27 46.28	2.1167	2 14 53.3	13.352	2	1 8 37.70	2.1062	12 7 48.1	11.002
3	23 29 53.24	2.1152	2 28 13.6	13.325	3	1 10 44.10	2.1072	12 18 46.1	10.931
4	23 32 0.10	2.1137	2 41 32.3	13.297	4	1 12 50.56	2.1082	12 29 30.8	10.860
5	23 34 6.88	2.1122	2 54 49.3	13.269	5	1 14 57.08	2.1092	12 40 29.3	10.789
6	23 36 13.57	2.1108	3 8 4.6	13.240	6	1 17 3.66	2.1102	12 51 14.5	10.717
7	23 38 20.18	2.1095	3 21 18.1	13.209	7	1 19 10.31	2.1113	13 1 55.3	10.643
8	23 40 26.71	2.1082	3 34 29.7	13.177	8	1 21 17.02	2.1124	13 12 31.6	10.568
9	23 42 33.17	2.1070	3 47 39.4	13.145	9	1 23 23.80	2.1136	13 23 3.5	10.493
10	23 44 39.55	2.1058	4 0 47.1	13.112	10	1 25 30.65	2.1148	13 33 30.8	10.418
11	23 46 45.87	2.1048	4 13 52.8	13.077	11	1 27 37.57	2.1160	13 43 53.6	10.342
12	23 48 52.13	2.1038	4 26 56.3	13.041	12	1 29 44.57	2.1173	13 54 11.8	10.265
13	23 50 58.33	2.1029	4 39 57.7	13.005	13	1 31 51.65	2.1186	14 4 25.4	10.187
14	23 53 4.48	2.1020	4 52 56.9	12.967	14	1 33 58.80	2.1198	14 14 34.2	10.108
15	23 55 10.57	2.1012	5 5 53.7	12.928	15	1 36 6.02	2.1210	14 24 38.3	10.028
16	23 57 16.62	2.1004	5 18 48.2	12.888	16	1 38 13.32	2.1224	14 34 37.6	9.948
17	23 59 22.62	2.0997	5 31 40.3	12.848	17	1 40 20.71	2.1238	14 44 32.1	9.867
18	0 1 28.58	2.0991	5 44 30.0	12.807	18	1 42 28.18	2.1252	14 54 21.7	9.786
19	0 3 34.51	2.0985	5 57 17.1	12.764	19	1 44 35.73	2.1266	15 4 6.4	9.704
20	0 5 40.40	2.0979	6 10 1.7	12.721	20	1 46 43.37	2.1281	15 13 46.2	9.622
21	0 7 46.26	2.0975	6 22 43.6	12.678	21	1 48 51.10	2.1295	15 23 21.0	9.538
22	0 9 52.10	2.0971	6 35 22.8	12.631	22	1 50 58.91	2.1309	15 32 50.7	9.453
23	0 11 57.92	2.0967	6 47 59.3	12.584	23	1 53 6.81	2.1324	15 42 15.3	9.368
24	0 14 3.71	2.0964	N. 7 0 32.9	12.537	24	1 55 14.80	2.1339	N. 15 51 34.9	9.283

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 21.					THURSDAY 23.				
0	1 ^h 55 ^m 14.80	2.1339	N.15° 51' 34.9	9.283	0	3 ^h 39 ^m 24.83	2.2015	N.21° 26' 56.2	4.492
1	1 57 22.88	2.1354	16 0 49.3	9.197	1	3 41 36.95	2.2024	21 31 22.4	4.381
2	1 59 31.05	2.1369	16 9 58.5	9.109	2	3 43 49.12	2.2032	21 35 41.9	4.269
3	2 1 39.31	2.1385	16 19 2.4	9.021	3	3 46 1.33	2.2039	21 39 54.7	4.158
4	2 3 47.67	2.1401	16 28 1.1	8.933	4	3 48 13.59	2.2047	21 44 0.9	4.047
5	2 5 56.12	2.1416	16 36 54.4	8.844	5	3 50 25.90	2.2055	21 48 0.3	3.934
6	2 8 4.66	2.1432	16 45 42.4	8.755	6	3 52 38.25	2.2062	21 51 53.0	3.822
7	2 10 13.30	2.1447	16 54 25.0	8.664	7	3 54 50.64	2.2068	21 55 39.0	3.710
8	2 12 22.03	2.1462	17 3 2.1	8.573	8	3 57 3.06	2.2073	21 59 18.2	3.597
9	2 14 30.85	2.1478	17 11 33.8	8.481	9	3 59 15.52	2.2079	22 2 50.6	3.484
10	2 16 39.77	2.1494	17 19 59.9	8.389	10	4 1 28.01	2.2084	22 6 16.3	3.372
11	2 18 48.78	2.1509	17 28 20.5	8.297	11	4 3 40.53	2.2088	22 9 35.2	3.258
12	2 20 57.88	2.1525	17 36 35.5	8.203	12	4 5 53.07	2.2093	22 12 47.3	3.145
13	2 23 7.08	2.1542	17 44 44.9	8.109	13	4 8 5.64	2.2097	22 15 52.6	3.032
14	2 25 16.38	2.1558	17 52 48.6	8.014	14	4 10 18.23	2.2099	22 18 51.1	2.918
15	2 27 25.77	2.1573	18 0 46.6	7.919	15	4 12 30.83	2.2101	22 21 42.7	2.804
16	2 29 35.26	2.1589	18 8 38.9	7.823	16	4 14 43.44	2.2104	22 24 27.5	2.690
17	2 31 44.84	2.1605	18 16 25.4	7.727	17	4 16 56.07	2.2106	22 27 5.5	2.576
18	2 33 54.52	2.1621	18 24 6.1	7.630	18	4 19 8.71	2.2107	22 29 36.6	2.462
19	2 36 4.29	2.1637	18 31 41.0	7.533	19	4 21 21.35	2.2108	22 32 0.9	2.347
20	2 38 14.16	2.1652	18 39 10.1	7.436	20	4 23 34.00	2.2108	22 34 18.3	2.232
21	2 40 24.12	2.1667	18 46 33.3	7.337	21	4 25 46.65	2.2107	22 36 28.8	2.117
22	2 42 34.17	2.1682	18 53 50.5	7.237	22	4 27 59.29	2.2106	22 38 32.4	2.003
23	2 44 44.31	2.1698	N.19° 1' 1.7	7.137	23	4 30 11.92	2.2105	N.22° 40' 29.2	1.889
WEDNESDAY 22.					FRIDAY 24.				
0	2 46 54.55	2.1714	N.19° 8' 6.9	7.037	0	4 32 24.55	2.2103	N.22° 42' 19.1	1.774
1	2 49 4.88	2.1729	19 15 6.1	6.936	1	4 34 37.16	2.2100	22 44 2.1	1.659
2	2 51 15.30	2.1744	19 21 59.2	6.834	2	4 36 49.75	2.2097	22 45 38.2	1.545
3	2 53 25.81	2.1758	19 28 46.2	6.732	3	4 39 2.33	2.2094	22 47 7.5	1.431
4	2 55 36.40	2.1773	19 35 27.1	6.630	4	4 41 14.88	2.2090	22 48 29.9	1.316
5	2 57 47.08	2.1788	19 42 1.8	6.527	5	4 43 27.41	2.2086	22 49 45.4	1.201
6	2 59 57.85	2.1803	19 48 30.4	6.424	6	4 45 39.91	2.2081	22 50 54.0	1.086
7	3 2 8.71	2.1817	19 54 52.7	6.320	7	4 47 52.38	2.2075	22 51 55.7	0.972
8	3 4 19.65	2.1830	20 1 8.8	6.216	8	4 50 4.81	2.2068	22 52 50.6	0.857
9	3 6 30.67	2.1843	20 7 18.6	6.111	9	4 52 17.20	2.2061	22 53 38.6	0.742
10	3 8 41.77	2.1857	20 13 22.1	6.006	10	4 54 29.55	2.2054	22 54 19.7	0.628
11	3 10 52.95	2.1870	20 19 19.3	5.901	11	4 56 41.85	2.2047	22 54 54.0	0.514
12	3 13 4.21	2.1883	20 25 10.2	5.795	12	4 58 54.11	2.2039	22 55 21.4	0.400
13	3 15 15.55	2.1896	20 30 54.7	5.688	13	5 1 6.32	2.2030	22 55 42.0	0.286
14	3 17 26.96	2.1908	20 36 32.8	5.581	14	5 3 18.47	2.2020	22 55 55.7	0.172
15	3 19 38.45	2.1921	20 42 4.4	5.473	15	5 5 30.56	2.2010	22 56 2.6	+0.058
16	3 21 50.01	2.1932	20 47 29.6	5.366	16	5 7 42.59	2.1999	22 56 2.7	-0.055
17	3 24 1.64	2.1943	20 52 48.3	5.258	17	5 9 54.55	2.1988	22 55 56.0	0.169
18	3 26 13.33	2.1954	20 58 0.5	5.149	18	5 12 6.45	2.1977	22 55 42.4	0.283
19	3 28 25.09	2.1966	21 3 6.2	5.040	19	5 14 18.28	2.1965	22 55 22.0	0.396
20	3 30 36.92	2.1977	21 8 5.3	4.931	20	5 16 30.03	2.1959	22 54 54.9	0.508
21	3 32 48.81	2.1987	21 12 57.9	4.822	21	5 18 41.70	2.1939	22 54 21.0	0.621
22	3 35 0.76	2.1997	21 17 43.9	4.713	22	5 20 53.30	2.1926	22 53 40.4	0.733
23	3 37 12.77	2.2006	21 22 23.3	4.603	23	5 23 4.81	2.1911	22 52 53.0	0.846
24	3 39 24.83	2.2015	N.21° 26' 56.2	4.492	24	5 25 16.23	2.1896	N.22° 51' 58.9	0.958

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 25.					MONDAY 27.				
0	5 25 16.23	2.1896	N.22° 51' 58.9"	0.958	0	7 7 50.11	2.0706	N.20° 4' 17.4"	5.842
1	5 27 27.56	2.1881	22 50 58.1	1.069	1	7 9 54.25	2.0674	19 58 24.2	5.831
2	5 29 38.80	2.1865	22 49 50.6	1.181	2	7 11 58.20	2.0643	19 52 25.7	6.019
3	5 31 49.94	2.1849	22 48 36.4	1.292	3	7 14 1.96	2.0611	19 46 21.9	6.107
4	5 34 0.99	2.1832	22 47 15.6	1.409	4	7 16 5.53	2.0579	19 40 12.9	6.193
5	5 36 11.93	2.1815	22 45 48.1	1.513	5	7 18 8.91	2.0547	19 33 58.8	6.278
6	5 38 22.77	2.1797	22 44 14.0	1.623	6	7 20 12.10	2.0515	19 27 39.6	6.363
7	5 40 33.50	2.1779	22 42 33.3	1.733	7	7 22 15.09	2.0483	19 21 15.3	6.448
8	5 42 44.12	2.1761	22 40 46.0	1.849	8	7 24 17.89	2.0451	19 14 45.9	6.533
9	5 44 54.63	2.1742	22 38 52.2	1.951	9	7 26 20.50	2.0419	19 8 11.5	6.615
10	5 47 5.02	2.1722	22 36 51.9	2.060	10	7 28 22.92	2.0387	19 1 32.1	6.697
11	5 49 15.29	2.1702	22 34 45.0	2.169	11	7 30 25.15	2.0356	18 54 47.8	6.779
12	5 51 25.44	2.1681	22 32 31.6	2.277	12	7 32 27.19	2.0324	18 47 58.6	6.861
13	5 53 35.46	2.1660	22 30 11.7	2.385	13	7 34 29.04	2.0292	18 41 4.5	6.943
14	5 55 45.36	2.1639	22 27 45.4	2.492	14	7 36 30.69	2.0260	18 34 5.6	7.021
15	5 57 55.13	2.1617	22 25 12.7	2.598	15	7 38 32.15	2.0227	18 27 2.0	7.099
16	6 0 4.76	2.1594	22 22 33.6	2.705	16	7 40 33.42	2.0195	18 19 53.7	7.178
17	6 2 14.26	2.1572	22 19 48.1	2.812	17	7 42 34.49	2.0163	18 12 40.7	7.256
18	6 4 23.62	2.1548	22 16 56.2	2.917	18	7 44 35.37	2.0131	18 5 23.0	7.333
19	6 6 32.84	2.1525	22 13 58.0	3.022	19	7 46 36.06	2.0099	17 58 0.7	7.409
20	6 8 41.92	2.1501	22 10 53.5	3.127	20	7 48 36.56	2.0067	17 50 33.9	7.485
21	6 10 50.85	2.1477	22 7 42.8	3.231	21	7 50 36.87	2.0036	17 43 2.5	7.560
22	6 12 59.64	2.1452	22 4 25.8	3.335	22	7 52 36.99	2.0004	17 35 26.7	7.634
23	6 15 8.28	2.1427	N.22° 1' 2.6"	3.438	23	7 54 36.92	1.9973	N.17° 27' 46.4"	7.708
SUNDAY 26.					TUESDAY 28.				
0	6 17 16.76	2.1401	N.21° 57' 33.3"	3.540	0	7 56 36.67	1.9949	N.17° 20' 1.7"	7.781
1	6 19 25.09	2.1375	21 53 57.8	3.643	1	7 58 36.23	1.9911	17 12 12.7	7.853
2	6 21 33.26	2.1349	21 50 16.2	3.745	2	8 0 35.60	1.9879	17 4 19.4	7.925
3	6 23 41.28	2.1323	21 46 28.4	3.847	3	8 2 34.78	1.9848	16 56 21.7	7.997
4	6 25 49.14	2.1296	21 42 34.6	3.947	4	8 4 33.77	1.9817	16 48 19.8	8.067
5	6 27 56.83	2.1268	21 38 34.8	4.047	5	8 6 32.58	1.9787	16 40 13.7	8.136
6	6 30 4.36	2.1241	21 34 29.0	4.147	6	8 8 31.21	1.9757	16 32 3.5	8.204
7	6 32 11.72	2.1213	21 30 17.2	4.246	7	8 10 29.66	1.9726	16 23 49.2	8.273
8	6 34 18.92	2.1186	21 25 59.5	4.344	8	8 12 27.92	1.9695	16 15 30.8	8.341
9	6 36 25.95	2.1158	21 21 35.9	4.442	9	8 14 26.00	1.9665	16 7 8.3	8.407
10	6 38 32.81	2.1129	21 17 6.4	4.540	10	8 16 23.90	1.9636	15 58 41.9	8.473
11	6 40 39.50	2.1100	21 12 31.1	4.637	11	8 18 21.63	1.9607	15 50 11.5	8.539
12	6 42 46.01	2.1071	21 7 50.0	4.733	12	8 20 19.18	1.9577	15 41 37.2	8.604
13	6 44 52.35	2.1042	21 3 3.2	4.828	13	8 22 16.55	1.9548	15 32 59.0	8.668
14	6 46 58.51	2.1012	20 58 10.6	4.924	14	8 24 13.75	1.9519	15 24 17.0	8.731
15	6 49 4.49	2.0982	20 53 12.3	5.018	15	8 26 10.78	1.9490	15 15 31.3	8.793
16	6 51 10.29	2.0952	20 48 8.4	5.113	16	8 28 7.63	1.9461	15 6 41.8	8.856
17	6 53 15.91	2.0922	20 42 58.8	5.207	17	8 30 4.31	1.9433	14 57 48.6	8.917
18	6 55 21.35	2.0892	20 37 43.6	5.299	18	8 32 0.83	1.9406	14 48 51.8	8.978
19	6 57 26.61	2.0861	20 32 22.9	5.391	19	8 33 57.18	1.9378	14 39 51.3	9.038
20	6 59 31.68	2.0830	20 26 56.7	5.483	20	8 35 53.36	1.9350	14 30 47.2	9.098
21	7 1 36.57	2.0799	20 21 25.0	5.574	21	8 37 49.38	1.9323	14 21 39.6	9.156
22	7 3 41.27	2.0768	20 15 47.8	5.664	22	8 39 45.24	1.9296	14 12 28.5	9.213
23	7 5 45.78	2.0737	20 10 5.3	5.753	23	8 41 40.94	1.9269	14 3 14.0	9.271
24	7 7 50.11	2.0706	N.20° 4' 17.4"	5.842	24	8 43 36.47	1.9243	N.13° 53' 56.0"	9.328

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 29.					THURSDAY 30.				
0	^h 8 ^m 43 ^s 36.47	1.9243	N. 13° 53' 56.0"	9.398	0	^h 9 ^m 29 ^s 7.31	1.8792	N. 9° 55' 23.3"	10.487
1	8 45 31.85	1.9218	13 44 34.6	9.384	1	9 30 59.59	1.8705	9 44 52.9	10.588
2	8 47 27.08	1.9192	13 35 9.9	9.438	2	9 32 51.77	1.8689	9 34 20.0	10.568
3	8 49 22.15	1.9166	13 25 42.0	9.492	3	9 34 43.86	1.8674	9 23 44.7	10.607
4	8 51 17.07	1.9142	13 16 10.8	9.547	4	9 36 35.86	1.8659	9 13 7.1	10.645
5	8 53 11.85	1.9117	13 6 36.4	9.601	5	9 38 27.77	1.8644	9 2 27.3	10.682
6	8 55 6.48	1.9093	12 56 58.7	9.654	6	9 40 19.59	1.8629	8 51 45.2	10.730
7	8 57 0.97	1.9069	12 47 17.9	9.705	7	9 42 11.32	1.8615	8 41 0.9	10.757
8	8 58 55.31	1.9045	12 37 34.1	9.756	8	9 44 2.97	1.8600	8 30 14.4	10.793
9	9 0 49.51	1.9022	12 27 47.2	9.807	9	9 45 54.55	1.8590	8 19 25.8	10.828
10	9 2 43.58	1.9000	12 17 57.2	9.857	10	9 47 46.05	1.8577	8 8 35.1	10.863
11	9 4 37.51	1.8977	12 8 4.3	9.907	11	9 49 37.48	1.8565	7 57 42.3	10.897
12	9 6 31.30	1.8954	11 58 8.4	9.956	12	9 51 28.83	1.8553	7 46 47.5	10.930
13	9 8 24.96	1.8933	11 48 9.6	10.003	13	9 53 20.11	1.8543	7 35 50.7	10.962
14	9 10 18.50	1.8912	11 38 8.0	10.050	14	9 55 11.34	1.8533	7 24 52.0	10.994
15	9 12 11.91	1.8892	11 28 3.6	10.097	15	9 57 2.51	1.8523	7 13 51.4	11.026
16	9 14 5.20	1.8871	11 17 56.4	10.143	16	9 58 53.62	1.8514	7 2 48.9	11.057
17	9 15 58.36	1.8850	11 7 46.5	10.188	17	10 0 44.68	1.8505	6 51 44.6	11.087
18	9 17 51.40	1.8831	10 57 33.8	10.233	18	10 2 35.68	1.8497	6 40 38.5	11.117
19	9 19 44.33	1.8812	10 47 18.5	10.277	19	10 4 26.64	1.8489	6 29 30.6	11.147
20	9 21 37.14	1.8793	10 37 0.6	10.321	20	10 6 17.55	1.8482	6 18 20.9	11.176
21	9 23 29.84	1.8775	10 26 40.0	10.364	21	10 8 8.42	1.8475	6 7 9.5	11.203
22	9 25 22.44	1.8757	10 16 16.9	10.406	22	10 9 59.25	1.8469	5 55 56.5	11.230
23	9 27 14.93	1.8739	10 5 51.3	10.447	23	10 11 50.05	1.8463	5 44 41.9	11.256
24	9 29 7.31	1.8722	N. 9° 55' 23.3"	10.487	24	10 13 40.81	1.8457	N. 5° 33' 25.8"	11.282

PHASES OF THE MOON.

	d	h	m
☾ First Quarter,	4	15	19.2
☾ Full Moon,	11	18	56.7
☾ Last Quarter,	18	9	18.8
● New Moon,	26	2	3.5

	d	h
☾ Apogee,	1	2.3
☾ Perigee,	13	5.8
☾ Apogee,	28	14.4

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun W.	50 4 34	3440	51 26 5	3440	52 47 34	3440	54 9 3	3443
	Spica E.	81 2 1	3078	79 33 25	3080	78 4 51	3080	76 36 17	3081
	Antares E.	126 29 4	3068	125 0 40	3068	123 32 16	3069	122 3 53	3068
2	Sun W.	60 56 30	3438	62 18 4	3435	63 39 41	3438	65 1 21	3439
	Pollux W.	23 56 26	3448	25 17 48	3408	26 39 56	3372	28 2 45	3341
	Spica E.	69 13 25	3076	67 44 46	3074	66 16 5	3073	64 47 21	3069
	Antares E.	114 41 44	3082	113 13 13	3080	111 44 39	3078	110 16 2	3074
3	Sun W.	71 50 48	3405	73 12 59	3399	74 35 17	3393	75 57 42	3386
	Pollux W.	35 4 38	3225	36 30 17	3207	37 56 18	3190	39 22 39	3174
	Spica E.	57 22 37	3048	55 53 24	3043	54 24 4	3036	52 54 36	3030
	Antares E.	102 51 46	2052	101 22 37	3048	99 53 21	3040	98 23 58	3034
4	Sun W.	82 52 2	3340	84 15 25	3330	85 38 59	3321	87 2 46	3310
	Pollux W.	46 39 6	3098	48 7 18	3084	49 35 47	3069	51 4 34	3055
	Spica E.	45 25 10	2993	43 54 48	2983	42 24 14	2973	40 53 28	2964
	Antares E.	90 54 47	2993	89 24 26	2984	87 53 53	2974	86 23 8	2964
5	Sun W.	94 5 5	3248	95 30 17	3234	96 55 46	3220	98 21 32	3205
	Pollux W.	58 33 1	2981	60 3 38	2965	61 34 34	2950	63 5 49	2935
	Regulus W.	21 34 26	3038	23 3 52	3009	24 33 54	2981	26 4 30	2956
	Spica E.	33 16 29	2911	31 44 24	2899	30 12 4	2887	28 39 29	2876
	Antares E.	78 46 1	2907	77 13 51	2894	75 41 25	2882	74 8 43	2869
6	Sun W.	105 34 52	3126	107 2 30	3110	108 30 28	3092	109 58 47	3074
	Pollux W.	70 47 8	2854	72 20 26	2837	73 54 6	2820	75 28 8	2803
	Regulus W.	33 44 54	2848	35 18 20	2827	36 52 13	2808	38 26 31	2788
	Antares E.	66 20 44	2796	64 46 11	2781	63 11 18	2766	61 36 5	2750
7	Sun W.	117 25 53	2983	118 56 27	2965	120 27 24	2946	121 58 45	2926
	Pollux W.	83 23 58	2715	85 0 18	2698	86 37 1	2680	88 14 8	2662
	Regulus W.	46 24 29	2690	48 1 22	2671	49 38 41	2652	51 16 26	2632
	Antares E.	53 34 39	2668	51 57 16	2651	50 19 30	2634	48 41 21	2616
	α Aquilæ E.	106 3 35	3145	104 36 20	3119	103 8 34	3096	101 40 19	3079
8	Sun W.	129 41 42	2828	131 15 33	2809	132 49 49	2789	134 24 31	2770
	Pollux W.	96 25 49	2572	98 5 22	2554	99 45 20	2537	101 25 42	2520
	Regulus W.	59 31 45	2536	61 12 8	2517	62 52 57	2498	64 34 13	2480
	Antares E.	40 24 44	2531	38 44 14	2515	37 3 22	2499	35 22 7	2483
	α Aquilæ E.	94 12 6	2985	92 41 9	2945	91 9 47	2927	89 38 2	2909
9	Regulus W.	73 7 4	2388	74 50 56	2371	76 35 13	2353	78 19 56	2336
	Spica W.	19 3 59	2396	20 47 36	2376	22 31 45	2355	24 16 24	2336
	α Aquilæ E.	81 53 53	2831	80 20 6	2819	78 46 3	2806	77 11 46	2798
10	Regulus W.	87 9 31	2256	88 56 36	2241	90 44 2	2227	92 31 49	2213
	Spica W.	33 6 26	2248	34 53 42	2233	36 41 21	2217	38 29 23	2203
	α Aquilæ E.	69 17 34	2769	67 42 25	2768	66 7 15	2769	64 32 6	2773
	Fomalhaut E.	95 39 30	2711	94 3 5	2694	92 26 17	2678	90 49 8	2664
11	Regulus W.	101 35 40	2153	103 25 19	2142	105 15 14	2132	107 5 24	2123
	Spica W.	47 34 45	2138	49 24 46	2127	51 15 4	2117	53 5 37	2107

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	55 30 31	3443	56 51 59	3442	58 13 28	3441	59 34 58	3430
	Spica	E.	75 7 44	3081	73 39 11	3080	72 10 37	3079	70 42 2	3078
	Antares	E.	120 35 29	3088	119 7 5	3087	117 38 40	3086	116 10 13	3084
2	Sun	W.	66 23 5	3485	67 44 53	3481	69 6 46	3418	70 28 44	3411
	Pollux	W.	25 26 9	3313	30 50 5	3388	32 14 30	3365	33 39 22	3345
	Spica	E.	63 18 33	3085	61 49 41	3082	60 20 45	3058	58 51 44	3053
	Antares	E.	108 47 21	3070	107 18 35	3066	105 49 44	3062	104 20 48	3057
3	Sun	W.	77 20 15	3378	78 42 57	3369	80 5 49	3361	81 28 50	3351
	Pollux	W.	40 49 19	3158	42 16 18	3143	43 43 36	3128	45 11 12	3113
	Spica	E.	51 25 0	3023	49 55 16	3017	48 25 24	3009	46 55 22	3001
	Antares	E.	96 54 27	3026	95 24 47	3018	93 54 57	3010	92 24 57	3002
4	Sun	W.	88 26 46	3399	89 50 59	3387	91 15 26	3374	92 40 8	3361
	Pollux	W.	52 33 39	3040	54 3 2	3036	55 32 43	3010	57 2 43	3006
	Spica	E.	39 22 30	2954	37 51 20	2944	36 19 57	2933	34 48 20	2922
	Antares	E.	84 52 10	2954	83 20 59	2942	81 49 34	2931	80 17 55	2920
5	Sun	W.	99 47 35	3190	101 13 56	3174	102 40 36	3159	104 7 34	3143
	Pollux	W.	64 37 24	2919	66 9 19	2902	67 41 35	2887	69 14 11	2870
	Regulus	W.	27 35 38	2933	29 7 15	2910	30 39 21	2889	32 11 54	2868
	Spica	E.	27 6 39	2864	25 33 34	2852	24 0 13	2839	22 26 36	2828
	Antares	E.	72 35 44	2855	71 2 27	2840	69 28 51	2826	67 54 57	2811
6	Sun	W.	111 27 28	3056	112 56 31	3039	114 25 56	3021	115 55 43	3002
	Pollux	W.	77 2 32	2785	78 37 19	2768	80 12 29	2750	81 48 2	2733
	Regulus	W.	40 1 15	2768	41 36 25	2749	43 12 0	2729	44 48 2	2710
	Antares	E.	60 0 31	2734	58 24 36	2717	56 48 19	2701	55 11 40	2684
7	Sun	W.	123 30 31	2907	125 2 41	2887	126 35 16	2868	128 8 16	2848
	Pollux	W.	80 51 39	2643	91 29 35	2626	93 7 55	2607	94 46 40	2590
	Regulus	W.	52 54 37	2613	54 33 14	2593	56 12 18	2574	57 51 48	2555
	Antares	E.	47 2 48	2599	45 23 52	2583	43 44 33	2565	42 4 50	2548
	α Aquilæ	E.	100 11 35	3049	98 42 23	3027	97 12 44	3005	95 42 38	2985
8	Sun	W.	135 50 38	2750	137 35 11	2732	139 11 9	2713	140 47 32	2693
	Pollux	W.	103 6 28	2502	104 47 38	2486	106 29 11	2469	108 11 8	2453
	Regulus	W.	66 15 55	2461	67 58 3	2443	69 40 37	2424	71 23 38	2406
	Antares	E.	33 40 30	2467	31 58 31	2452	30 16 10	2438	28 33 29	2425
	α Aquilæ	E.	88 5 54	2691	86 33 24	2675	85 0 33	2659	83 27 22	2645
9	Regulus	W.	80 5 3	2319	81 50 35	2303	83 36 30	2287	85 22 49	2271
	Spica	W.	26 1 31	2317	27 47 6	2299	29 33 7	2281	31 19 34	2264
	α Aquilæ	E.	75 37 15	2788	74 2 32	2782	72 27 40	2775	70 52 40	2771
10	Regulus	W.	94 19 57	2300	96 8 25	2187	97 57 12	2175	99 46 17	2163
	Spica	W.	40 17 47	2188	42 6 32	2175	43 55 37	2162	45 45 2	2150
	α Aquilæ	E.	62 57 1	2778	61 22 4	2766	59 47 18	2757	58 12 46	2811
	Fomalhaut	E.	89 11 40	2652	87 33 55	2640	85 55 54	2629	84 17 39	2621
11	Regulus	W.	108 55 48	2115	110 46 25	2107	112 37 13	2100	114 28 12	2094
	Spica	W.	54 56 25	2098	56 47 27	2090	58 38 42	2082	60 30 9	2075

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
11	α Aquilæ E.	56 38' 33"	2629	55 4' 43"	2651	53 31' 21"	2676	51 56' 32"	2906
	Fomalhaut E.	82 39 12	2613	81 0 35	2608	79 21 51	2604	77 43 1	2601
	α Pegasi E.	101 38 0	2270	99 51 17	2258	98 4 16	2247	96 16 58	2236
12	Spica W.	62 21 47	2068	64 13 35	2062	66 5 32	2057	67 57 37	2053
	Antares W.	17 10 2	2155	18 59 37	2134	20 49 44	2117	22 40 17	2103
	α Aquilæ E.	44 26 23	3152	42 59 16	3225	41 33 37	3311	40 9 38	3410
	Fomalhaut E.	69 28 47	2616	67 50 14	2626	66 11 54	2638	64 33 50	2652
	α Pegasi E.	87 17 1	2198	85 28 30	2193	83 39 52	2189	81 51 8	2186
	Mars E.	118 41 19	2313	116 55 38	2307	115 9 48	2300	113 23 49	2295
13	Spica W.	77 19 18	2042	79 11 47	2043	81 4 16	2042	82 56 44	2044
	Antares W.	31 57 2	2068	33 48 51	2065	35 40 44	2063	37 32 40	2062
	Fomalhaut E.	56 29 34	2768	54 54 24	2803	53 20 0	2842	51 46 27	2886
	α Pegasi E.	72 46 51	2186	70 58 3	2190	69 9 21	2194	67 20 45	2200
	Mars E.	104 32 20	2281	102 45 52	2280	100 59 23	2280	99 12 54	2261
	α Arietis E.	115 45 32	2071	113 53 48	2070	112 2 2	2070	110 10 17	2071
	Venus E.	121 54 45	2246	120 7 26	2245	118 20 6	2246	116 32 47	2247
14	Spica W.	92 18 15	2061	94 10 15	2065	96 2 8	2070	97 53 53	2076
	Antares W.	46 52 9	2072	48 43 52	2076	50 35 28	2081	52 26 56	2086
	Fomalhaut E.	44 15 9	3205	42 49 6	3294	41 24 48	3396	40 2 27	3511
	α Pegasi E.	58 20 25	2247	56 33 7	2290	54 46 8	2275	52 59 32	2291
	Mars E.	90 21 14	2297	88 35 10	2302	86 49 14	2308	85 3 26	2315
	α Arietis E.	100 52 5	2084	99 0 41	2089	97 9 25	2094	95 18 17	2100
	Saturn E.	104 7 4	2109	102 16 18	2113	100 25 39	2118	98 35 8	2124
	Venus E.	107 37 2	2265	105 50 11	2270	104 3 28	2277	102 16 54	2283
	Jupiter E.	110 22 42	2130	108 32 28	2134	106 42 21	2139	104 52 22	2146
15	Antares W.	61 41 52	2123	63 32 16	2132	65 22 26	2141	67 12 22	2151
	α Pegasi E.	44 13 31	2405	42 30 4	2436	40 47 21	2470	39 5 26	2509
	Mars E.	76 17 7	2356	74 32 29	2366	72 48 6	2377	71 3 58	2387
	α Arietis E.	86 5 14	2139	84 15 15	2149	82 25 30	2159	80 36 0	2169
	Saturn E.	89 25 8	2163	87 35 45	2172	85 46 36	2182	83 57 42	2192
	Venus E.	93 26 56	2328	91 41 37	2338	89 56 33	2348	88 11 44	2359
	Jupiter E.	95 45 4	2185	93 56 14	2194	92 7 37	2203	90 19 14	2213
	Sun E.	135 2 36	2402	133 19 4	2411	131 35 45	2422	129 52 41	2432
16	Antares W.	76 18 8	2206	78 6 27	2218	79 54 27	2231	81 42 9	2243
	Mars E.	62 27 26	2449	60 45 1	2462	59 2 55	2477	57 21 9	2492
	α Arietis E.	71 32 40	2227	69 44 53	2240	67 57 25	2254	66 10 18	2268
	Saturn E.	74 57 15	2250	73 10 2	2263	71 23 8	2276	69 36 33	2289
	Venus E.	79 31 58	2424	77 48 57	2437	76 6 15	2451	74 23 53	2466
	Jupiter E.	81 21 20	2270	79 34 37	2283	77 48 13	2296	76 2 7	2309
	Sun E.	121 21 22	2492	119 39 58	2505	117 58 52	2519	116 18 5	2533
17	Antares W.	90 35 53	2309	92 21 40	2323	94 7 6	2337	95 52 12	2350
	α Aquilæ W.	43 22 1	3371	44 44 51	3319	46 8 40	3375	47 33 21	3326
	Mars E.	48 57 29	2567	47 17 49	2583	45 38 31	2600	43 59 36	2617
	α Arietis E.	57 19 49	2339	55 34 47	2355	53 50 7	2371	52 5 50	2386
	Saturn E.	60 48 37	2359	59 4 4	2374	57 19 52	2389	55 36 1	2404
	Venus E.	65 57 16	2542	64 17 1	2557	62 37 7	2573	60 57 35	2590
	Jupiter E.	67 16 26	2376	65 32 17	2391	63 48 29	2405	62 5 1	2419

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
11	α Aquilæ	E.	50° 26' 21"	2243	48° 54' 55"	2264	47° 24' 22"	2031	45° 54' 48"	2087
	Fomalhaut	E.	76 4 7	2600	74 25 12	2601	72 46 19	2604	71 7 30	2609
	α Pegasi	E.	94 29 24	2227	92 41 36	2218	90 53 36	2210	89 5 24	2203
12	Spica	W.	69 49 48	2050	71 42 5	2047	73 34 26	2044	75 26 51	2043
	Antares	W.	24 31 11	2083	26 22 21	2084	28 13 45	2077	30 5 19	2079
	α Aquilæ	E.	38 47 33	2594	37 27 35	2586	36 10 1	2809	34 55 8	2885
	Fomalhaut	E.	62 56 5	2669	61 18 43	2689	59 41 48	2712	58 5 24	2738
	α Pegasi	E.	80 2 19	2184	78 13 28	2183	76 24 35	2183	74 35 42	2184
	Mars	E.	111 37 42	2290	109 51 28	2287	108 5 9	2284	106 18 46	2282
13	Spica	W.	84 49 10	2045	86 41 34	2048	88 33 54	2052	90 26 8	2056
	Antares	W.	39 24 37	2062	41 16 34	2064	43 8 29	2066	45 0 21	2068
	Fomalhaut	E.	50 13 50	2235	48 42 16	2222	47 11 53	2255	45 42 48	2125
	α Pegasi	E.	65 32 17	2206	63 43 59	2214	61 55 53	2224	60 8 1	2235
	Mars	E.	97 26 27	2283	95 40 2	2285	93 53 41	2289	92 7 25	2292
	α Arietis	E.	108 18 33	2072	106 26 51	2073	104 35 11	2076	102 43 35	2080
	Venus	E.	114 45 30	2249	112 58 16	2252	111 11 6	2256	109 24 1	2260
14	Spica	W.	99 45 29	2083	101 36 54	2091	103 28 7	2099	105 19 8	2107
	Antares	W.	54 18 16	2093	56 9 26	2099	58 0 26	2107	59 51 15	2115
	Fomalhaut	E.	38 42 15	2642	37 24 26	2791	36 9 14	2961	34 56 56	4157
	α Pegasi	E.	51 13 20	2210	49 27 35	2231	47 42 20	2253	45 57 38	2278
	Mars	E.	83 17 48	2322	81 32 20	2329	79 47 3	2337	78 1 58	2347
	α Arietis	E.	93 27 18	2107	91 36 29	2115	89 45 52	2122	87 55 27	2130
	Saturn	E.	96 44 46	2131	94 54 34	2138	93 4 33	2146	91 14 44	2155
	Venus	E.	100 30 30	2291	98 44 17	2300	96 58 17	2309	95 12 30	2317
	Jupiter	E.	103 2 33	2153	101 12 54	2159	99 23 25	2167	97 34 8	2176
15	Antares	W.	69 2 4	2161	70 51 30	2172	72 40 39	2183	74 29 32	2194
	α Pegasi	E.	37 24 25	2551	35 44 23	2599	34 5 26	2853	32 27 43	2716
	Mars	E.	69 20 5	2399	67 36 29	2411	65 53 10	2424	64 10 9	2436
	α Arietis	E.	78 46 46	2180	76 57 49	2199	75 9 9	2203	73 20 46	2214
	Saturn	E.	82 9 3	2204	80 20 41	2214	78 32 35	2226	76 44 46	2238
	Venus	E.	86 27 11	2371	84 42 55	2384	82 58 57	2397	81 15 18	2410
	Jupiter	E.	88 31 6	2224	86 43 14	2235	84 55 39	2247	83 8 21	2258
	Sun	E.	128 9 52	2443	126 27 19	2455	124 45 3	2467	123 3 4	2480
16	Antares	W.	83 29 32	2256	85 16 36	2269	87 3 21	2282	88 49 47	2296
	Mars	E.	55 39 44	2506	53 58 39	2520	52 17 54	2536	50 37 31	2551
	α Arietis	E.	64 23 31	2281	62 37 4	2296	60 50 58	2310	59 5 13	2324
	Saturn	E.	67 50 18	2302	66 4 22	2316	64 18 46	2331	62 33 31	2345
	Venus	E.	72 41 52	2481	71 0 12	2495	69 18 52	2510	67 37 53	2526
	Jupiter	E.	74 16 20	2322	72 30 52	2335	70 45 44	2348	69 0 55	2362
	Sun	E.	114 37 37	2546	112 57 28	2560	111 17 38	2574	109 38 8	2588
17	Antares	W.	97 36 58	2364	99 21 24	2378	101 5 30	2392	102 49 16	2406
	α Aquilæ	W.	48 58 47	2204	50 24 52	2178	51 51 30	2153	53 18 36	2132
	Mars	E.	42 21 4	2634	40 42 55	2651	39 5 9	2669	37 27 48	2688
	α Arietis	E.	50 21 55	2403	48 38 24	2419	46 55 16	2436	45 12 32	2453
	Saturn	E.	53 52 32	2419	52 9 25	2435	50 26 40	2450	48 44 17	2466
	Venus	E.	59 18 26	2606	57 39 39	2623	56 1 15	2639	54 23 13	2656
	Jupiter	E.	60 21 53	2433	58 39 6	2448	56 56 39	2462	55 14 33	2477

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	III ^h .	P. L. of Diff.	V ^h .	P. L. of Diff.	IX ^h .	P. L. of Diff.
17	Sun	E.	107° 58' 57"	2604	106° 20' 7"	2618	104° 41' 36"	2632	103° 3' 25"	2647
18	Antares	W.	104 32 42	2420	106 15 48	2434	107 58 34	2448	109 41 0	2462
	α Aquilæ	W.	54 46 7	3115	56 13 58	3101	57 42 6	3090	59 10 28	3081
	Mars	E.	35 50 52	2707	34 14 22	2727	32 38 18	2747	31 2 40	2768
	α Arietis	E.	43 30 13	2470	41 48 18	2469	40 6 49	2507	38 25 45	2526
	Saturn	E.	47 2 16	2482	45 20 38	2499	43 39 23	2515	41 58 31	2533
	Venus	E.	52 45 34	2673	51 8 18	2690	49 31 25	2707	47 54 55	2725
	Jupiter	E.	53 32 47	2492	51 51 22	2507	50 10 18	2521	48 29 34	2536
	Sun	E.	94 57 30	2732	93 21 19	2737	91 45 28	2752	90 9 57	2766
19	α Aquilæ	W.	66 34 18	3063	68 3 13	3063	69 32 8	3065	71 1 1	3068
	Fomalhaut	W.	42 13 58	3708	43 30 37	3649	44 48 19	3597	46 6 57	3553
	Saturn	E.	33 40 15	2694	32 1 53	2644	30 23 58	2605	28 46 31	2567
	Venus	E.	39 58 16	2615	38 24 8	2635	36 50 25	2654	35 17 7	2673
	Jupiter	E.	40 11 5	2611	38 32 25	2626	36 54 6	2641	35 16 7	2657
	Sun	E.	82 17 10	2840	80 43 34	2854	79 10 16	2868	77 37 16	2882
20	α Aquilæ	W.	78 24 14	3094	79 52 31	3101	81 20 40	3109	82 48 39	3117
	Fomalhaut	W.	52 50 31	3401	54 12 46	3381	55 35 24	3365	56 58 21	3350
	α Pegasi	W.	30 39 52	3161	32 6 48	3126	33 34 26	3098	35 2 38	3075
	Venus	E.	27 37 18	2987	26 6 49	3015	24 36 55	3045	23 7 38	3078
	Sun	E.	69 56 41	2950	68 25 26	2963	66 54 27	2975	65 23 43	2988
21	α Aquilæ	W.	90 5 50	3167	91 32 39	3178	92 59 15	3190	94 25 36	3202
	Fomalhaut	W.	63 56 31	3306	65 20 36	3301	66 44 46	3298	68 9 0	3296
	α Pegasi	W.	42 29 17	3009	43 59 19	3003	45 29 28	2998	46 59 43	2996
	Sun	E.	57 53 59	3048	56 24 46	3060	54 55 48	3073	53 27 5	3084
22	α Aquilæ	W.	101 33 33	3270	102 58 19	3286	104 22 47	3302	105 46 56	3319
	Fomalhaut	W.	75 10 25	3298	76 34 39	3300	77 58 50	3304	79 22 57	3308
	α Pegasi	W.	54 31 26	2995	56 1 45	2997	57 32 2	2999	59 2 16	3008
	Sun	E.	46 6 49	3136	44 30 23	3147	43 12 10	3158	41 45 10	3168
23	Fomalhaut	W.	86 22 12	3335	87 45 43	3342	89 9 6	3349	90 32 21	3357
	α Pegasi	W.	66 32 23	3022	68 2 9	3026	69 31 50	3030	71 1 25	3035
	Sun	E.	34 33 0	3214	33 7 7	3223	31 41 25	3231	30 15 53	3240
24	Fomalhaut	W.	97 26 9	3403	98 48 22	3414	100 10 23	3426	101 32 10	3438
	α Pegasi	W.	78 27 48	3061	79 56 45	3067	81 25 35	3073	82 54 18	3078
	Sun	E.	23 10 47	3284	21 46 17	3293	20 21 57	3301	18 57 47	3310
28	Sun	W.	21 9 38	3446	22 31 3	3446	23 52 27	3446	25 13 51	3447
	Regulus	E.	30 38 35	3148	29 11 24	3158	27 44 25	3169	26 17 39	3181
	Spica	E.	84 19 27	3073	82 50 45	3076	81 22 6	3078	79 53 29	3079
29	Sun	W.	32 0 42	3449	33 22 3	3448	34 43 25	3447	36 4 48	3446
	Spica	E.	72 30 44	3082	71 2 13	3089	69 33 42	3082	68 5 11	3082
	Antares	E.	117 59 2	3090	116 30 40	3089	115 2 17	3089	113 33 54	3088
30	Sun	W.	42 52 6	3437	44 13 41	3434	45 35 19	3431	46 57 1	3428
	Spica	E.	60 42 16	3075	59 13 36	3078	57 44 52	3069	56 16 5	3068
	Antares	E.	106 11 34	3079	104 42 59	3077	103 14 21	3073	101 45 39	3070

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
17	Sun	E.	101° 25' 34"	2662	99° 48' 5"	2677	98° 10' 52"	2692	96° 34' 1"	2707
18	Antares	W.	111 23 6	2476	113 4 53	2490	114 46 20	2504	116 27 28	2518
	α Aquilæ	W.	60 39 1	3073	62 7 43	3089	63 36 31	3095	65 5 23	3093
	Mars	E.	29 27 30	2791	27 52 50	2815	26 18 41	2839	24 45 4	2867
	α Arietis	E.	36 45 8	2546	35 4 59	2568	33 25 18	2588	31 46 7	2611
	Saturn	E.	40 18 3	2550	38 37 59	2567	36 58 19	2585	35 19 4	2604
	Venus	E.	46 18 48	2742	44 43 4	2760	43 7 44	2779	41 32 48	2797
	Jupiter	E.	46 49 11	2551	45 9 9	2566	43 29 27	2581	41 50 6	2596
	Sun	E.	88 34 45	2781	86 59 52	2796	85 25 19	2811	83 51 5	2825
19	α Aquilæ	W.	72 29 50	3071	73 58 35	3075	75 27 15	3081	76 55 48	3087
	Fomalhaut	W.	47 26 23	3514	48 46 32	3479	50 7 20	3449	51 28 41	3423
	Saturn	E.	27 9 34	2719	25 33 10	2738	23 57 21	2768	22 22 11	2802
	Venus	E.	33 44 14	2894	32 11 48	2918	30 39 49	2939	29 8 19	2969
	Jupiter	E.	33 38 29	2679	32 1 12	2688	30 24 16	2704	28 47 42	2722
	Sun	E.	76 4 34	2896	74 32 10	2909	73 0 3	2923	71 28 13	2937
20	α Aquilæ	W.	84 16 28	3126	85 44 6	3135	87 11 33	3145	88 38 48	3156
	Fomalhaut	W.	58 21 35	3338	59 45 3	3327	61 8 43	3319	62 32 33	3319
	α Pegasi	W.	36 31 18	3056	38 0 22	3039	39 29 46	3077	40 59 25	3017
	Venus	E.	21 39 1	3114	20 11 9	3158	18 44 9	3209	17 18 10	3270
	Sun	E.	63 53 15	3001	62 23 3	3014	60 53 7	3026	59 23 26	3037
21	α Aquilæ	W.	95 51 43	3215	97 17 34	3226	98 43 10	3242	100 8 30	3256
	Fomalhaut	W.	69 33 16	3294	70 57 34	3294	72 21 52	3295	73 46 9	3296
	α Pegasi	W.	48 30 1	2994	50 0 21	2993	51 30 43	2993	53 1 5	2993
	Sun	E.	51 58 36	3095	50 30 20	3105	49 2 17	3116	47 34 27	3126
22	α Aquilæ	W.	107 10 46	3336	108 34 16	3353	109 57 26	3372	111 20 14	3393
	Fomalhaut	W.	80 46 59	3313	82 10 56	3317	83 34 48	3323	84 58 33	3328
	α Pegasi	W.	60 32 26	3005	62 2 32	3009	63 32 34	3013	65 2 31	3017
	Sun	E.	40 18 22	3177	38 51 45	3186	37 25 19	3195	35 59 4	3204
23	Fomalhaut	W.	91 55 27	3365	93 18 23	3374	94 41 9	3383	96 3 45	3393
	α Pegasi	W.	72 30 54	3040	74 0 17	3045	75 29 34	3051	76 58 44	3056
	Sun	E.	28 50 31	3249	27 25 20	3258	26 0 19	3266	24 35 28	3275
24	Fomalhaut	W.	102 53 44	3450	104 15 4	3463	105 36 10	3476	106 57 1	3490
	α Pegasi	W.	84 22 55	3063	85 51 25	3069	87 19 48	3096	88 48 3	3101
	Sun	E.	17 33 47	3319	16 9 58	3330	14 46 21	3341	13 22 57	3354
28	Sun	W.	26 35 14	3447	27 56 37	3448	29 17 59	3448	30 39 21	3449
	Regulus	E.	24 51 7	3194	23 24 51	3210	21 58 54	3229	20 33 19	3253
	Spica	E.	78 24 54	3080	76 56 20	3081	75 27 47	3082	73 59 15	3082
29	Sun	W.	37 26 12	3445	38 47 38	3444	40 9 5	3442	41 30 34	3439
	Spica	E.	66 36 39	3081	65 8 6	3079	63 39 31	3078	62 10 54	3077
	Antares	E.	112 5 30	3067	110 37 4	3085	109 8 36	3083	107 40 6	3082
30	Sun	W.	48 18 46	3423	49 40 36	3420	51 2 30	3415	52 24 30	3409
	Spica	E.	54 47 14	3063	53 18 19	3060	51 49 20	3056	50 20 16	3051
	Antares	E.	100 16 53	3067	98 48 3	3083	97 19 8	3058	95 50 7	3054

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S							Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.		Diff. for 1 hour.	Apparent Declination.		Diff. for 1 hour.	Semi-diameter.			
		^h ^m ^s	^s		[°] ['] ^{''}	^{''}					
Frid.	1	6 42 18.59	10.340	N.23 5 49.8	-10.45	15 46.14	68.77	^m ^s ^s	3 35.69	^s ^s ^s	0.483
Sat.	2	6 46 26.59	10.328	23 1 26.9	11.46	15 46.14	68.73	3 47.11			0.471
Sun.	3	6 50 34.30	10.315	22 56 39.9	12.46	15 46.15	68.69	3 58.23			0.458
Mon.	4	6 54 41.69	10.301	22 51 29.0	13.45	15 46.16	68.65	4 9.03			0.444
Tues.	5	6 58 48.74	10.286	22 45 54.3	14.44	15 46.18	68.61	4 19.49			0.429
Wed.	6	7 2 55.43	10.270	22 39 55.9	15.42	15 46.19	68.56	4 29.59			0.413
Thur.	7	7 7 1.75	10.253	22 33 34.0	16.40	15 46.22	68.51	4 39.33			0.397
Frid.	8	7 11 7.67	10.238	22 26 48.6	17.37	15 46.25	68.45	4 48.66			0.381
Sat.	9	7 15 13.17	10.221	22 19 39.9	18.33	15 46.28	68.39	4 57.58			0.364
Sun.	10	7 19 18.24	10.203	22 12 8.2	19.28	15 46.31	68.33	5 6.07			0.346
Mon.	11	7 23 22.87	10.184	22 4 13.7	20.23	15 46.35	68.27	5 14.14			0.327
Tues.	12	7 27 27.06	10.165	21 55 56.4	21.17	15 46.39	68.21	5 21.74			0.308
Wed.	13	7 31 30.79	10.146	21 47 16.5	22.12	15 46.44	68.14	5 28.89			0.289
Thur.	14	7 35 34.05	10.126	21 38 14.3	23.06	15 46.49	68.07	5 35.57			0.269
Frid.	15	7 39 36.82	10.106	21 28 49.8	23.98	15 46.54	68.00	5 41.78			0.249
Sat.	16	7 43 39.11	10.085	21 19 3.2	24.89	15 46.59	67.93	5 47.50			0.228
Sun.	17	7 47 40.90	10.065	21 8 55.0	25.79	15 46.65	67.86	5 52.72			0.208
Mon.	18	7 51 42.18	10.043	20 58 25.2	26.68	15 46.71	67.79	5 57.42			0.187
Tues.	19	7 55 42.94	10.021	20 47 34.0	27.57	15 46.78	67.71	6 1.61			0.165
Wed.	20	7 59 43.17	9.998	20 36 21.7	28.44	15 46.84	67.63	6 5.27			0.142
Thur.	21	8 3 42.85	9.975	20 24 48.6	29.30	15 46.92	67.55	6 8.38			0.119
Frid.	22	8 7 41.99	9.952	20 12 54.9	30.15	15 47.00	67.47	6 10.97			0.096
Sat.	23	8 11 40.56	9.928	20 0 40.8	31.00	15 47.08	67.38	6 12.99			0.072
Sun.	24	8 15 38.56	9.904	19 48 6.6	31.84	15 47.17	67.30	6 14.42			0.048
Mon.	25	8 19 35.98	9.880	19 35 12.6	32.66	15 47.27	67.22	6 15.27			0.024
Tues.	26	8 23 32.81	9.856	19 21 59.1	33.46	15 47.37	67.14	6 15.54			0.000
Wed.	27	8 27 29.05	9.832	19 8 26.2	34.25	15 47.48	67.05	6 15.23			0.024
Thur.	28	8 31 24.68	9.807	18 54 34.5	35.04	15 47.58	66.97	6 14.31			0.049
Frid.	29	8 35 19.70	9.781	18 40 24.3	35.81	15 47.70	66.88	6 12.78			0.075
Sat.	30	8 39 14.10	9.755	18 25 55.6	36.56	15 47.82	66.79	6 10.63			0.101
Sun.	31	8 43 7.88	9.729	18 11 8.8	37.31	15 47.95	66.70	6 7.86			0.127
Mon.	32	8 47 1.03	9.703	N.17 56 4.2	-38.05	15 48.08	66.61	6 4.46			0.153

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0.19 from the Sidereal Time.

— prefixed to the hourly change of declination indicates that the north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be subtracted from Mean Time.	Diff. for 1 hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
Frid.	1	^h 6 ^m 42 ^s 17.97	10.339	N.23° 5' 50.5"	-10.45	^m 3 35.66	0.483	^h 6 ^m 38 ^s 42.31
Sat.	2	6 46 25.94	10.327	23 1 27.7	11.46	3 47.08	0.471	6 42 38.87
Sun.	3	6 50 33.62	10.314	22 56 40.8	12.46	3 58.20	0.458	6 46 35.42
Mon.	4	6 54 40.98	10.300	22 51 30.0	13.45	4 9.00	0.444	6 50 31.98
Tues.	5	6 58 48.00	10.285	22 45 55.4	14.44	4 19.46	0.429	6 54 28.54
Wed.	6	7 2 54.66	10.269	22 39 57.2	15.42	4 29.56	0.413	6 58 25.10
Thur.	7	7 7 0.95	10.253	22 33 35.3	16.40	4 39.30	0.397	7 2 21.65
Frid.	8	7 11 6.84	10.237	22 26 50.1	17.37	4 48.63	0.381	7 6 18.21
Sat.	9	7 15 12.32	10.220	22 19 41.5	18.33	4 57.55	0.364	7 10 14.77
Sun.	10	7 19 17.37	10.202	22 12 9.9	19.28	5 6.04	0.346	7 14 11.33
Mon.	11	7 23 21.98	10.183	22 4 15.5	20.23	5 14.10	0.327	7 18 7.88
Tues.	12	7 27 26.15	10.164	21 55 58.4	21.17	5 21.71	0.308	7 22 4.44
Wed.	13	7 31 29.86	10.145	21 47 18.6	22.12	5 28.86	0.289	7 26 1.00
Thur.	14	7 35 33.10	10.125	21 38 16.5	23.06	5 35.54	0.269	7 29 57.56
Frid.	15	7 39 35.86	10.105	21 28 52.1	23.98	5 41.75	0.249	7 33 54.11
Sat.	16	7 43 38.13	10.084	21 19 5.7	24.89	5 47.47	0.228	7 37 50.67
Sun.	17	7 47 39.91	10.064	21 8 57.6	25.79	5 52.69	0.208	7 41 47.22
Mon.	18	7 51 41.18	10.043	20 58 27.9	26.68	5 57.40	0.187	7 45 43.78
Tues.	19	7 55 41.93	10.021	20 47 36.8	27.57	6 1.59	0.165	7 49 40.34
Wed.	20	7 59 42.15	9.998	20 36 24.6	28.44	6 5.25	0.142	7 53 36.90
Thur.	21	8 3 41.83	9.975	20 24 51.6	29.30	6 8.37	0.119	7 57 33.45
Frid.	22	8 7 40.96	9.952	20 12 58.0	30.15	6 10.95	0.096	8 1 30.01
Sat.	23	8 11 39.53	9.928	20 0 44.0	31.00	6 12.97	0.072	8 5 26.56
Sun.	24	8 15 37.53	9.904	19 48 9.9	31.84	6 14.41	0.048	8 9 23.12
Mon.	25	8 19 34.95	9.880	19 35 16.0	32.66	6 15.27	0.024	8 13 19.68
Tues.	26	8 23 31.78	9.856	19 22 2.6	33.46	6 15.54	0.000	8 17 16.24
Wed.	27	8 27 28.02	9.832	19 8 29.8	34.25	6 15.23	0.024	8 21 12.79
Thur.	28	8 31 23.66	9.807	18 54 38.2	35.04	6 14.32	0.049	8 25 9.35
Frid.	29	8 35 18.69	9.781	18 40 28.0	35.81	6 12.79	0.075	8 29 5.90
Sat.	30	8 39 13.10	9.755	18 25 59.4	36.56	6 10.64	0.101	8 33 2.46
Sun.	31	8 43 6.89	9.729	18 11 12.6	37.31	6 7.87	0.127	8 36 59.01
Mon.	32	8 47 0.05	9.703	N.17 56 8.1	-38.05	6 4.48	0.153	8 40 55.57

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

— prefixed to the hourly change of declination indicates that the north declinations are decreasing.

Diff. for 1 hour,
+ 9".8565.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0 ^h .
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ'					
1	182	99° 43' 26.9	42' 44.6	143.03	−0.99	.00072189	+ 0.1	17 ^h 18 ^m 27.10
2	183	100 40 39.5	39 57.0	143.02	0.98	.00072179	− 0.8	17 14 31.19
3	184	101 37 51.8	37 9.1	143.01	0.96	.00072148	1.7	17 10 35.28
4	185	102 35 3.8	34 20.9	143.00	0.91	.00072095	2.6	17 6 39.37
5	186	103 32 15.6	31 32.6	142.99	0.84	.00072021	3.4	17 2 43.46
6	187	104 29 27.3	28 44.1	142.98	0.72	.00071928	4.1	16 58 47.55
7	188	105 26 38.7	25 55.3	142.97	0.60	.00071818	4.8	16 54 51.63
8	189	106 23 50.0	23 6.5	142.97	0.47	.00071692	5.5	16 50 55.72
9	190	107 21 1.6	20 17.8	142.98	0.33	.00071550	6.2	16 46 59.81
10	191	108 18 13.3	17 29.3	142.99	0.21	.00071393	6.9	16 43 3.90
11	192	109 15 25.2	14 40.9	143.00	−0.08	.00071222	7.5	16 39 7.99
12	193	110 12 37.2	11 52.8	143.01	+0.03	.00071037	8.1	16 35 12.08
13	194	111 9 49.5	9 5.0	143.02	0.11	.00070836	8.7	16 31 16.17
14	195	112 7 2.2	6 17.6	143.04	0.17	.00070621	9.2	16 27 20.25
15	196	113 4 15.5	3 30.6	143.07	0.19	.00070392	9.8	16 23 24.33
16	197	114 1 29.6	0 44.6	143.10	0.19	.00070147	10.5	16 19 28.42
17	198	114 58 44.3	57 59.1	143.13	0.14	.00069885	11.3	16 15 32.52
18	199	115 55 59.7	55 14.4	143.16	+0.08	.00069604	12.1	16 11 36.61
19	200	116 53 15.9	52 30.5	143.19	−0.01	.00069303	12.9	16 7 40.69
20	201	117 50 32.9	49 47.3	143.22	0.11	.00068983	13.8	16 3 44.78
21	202	118 47 50.7	47 4.9	143.26	0.23	.00068642	14.7	15 59 48.87
22	203	119 45 9.3	44 23.3	143.29	0.36	.00068277	15.7	15 55 52.96
23	204	120 42 28.8	41 42.7	143.33	0.48	.00067887	16.7	15 51 57.05
24	205	121 39 49.2	39 3.0	143.36	0.61	.00067473	17.8	15 48 1.14
25	206	122 37 10.4	36 24.0	143.40	0.72	.00067035	18.8	15 44 5.23
26	207	123 34 32.3	33 45.7	143.43	0.81	.00066572	19.8	15 40 9.32
27	208	124 31 55.0	31 8.3	143.46	0.87	.00066083	20.8	15 36 13.40
28	209	125 28 18.4	27 31.6	143.49	0.91	.00065570	21.8	15 32 17.50
29	210	126 26 42.4	25 55.5	143.52	0.92	.00065032	22.8	15 28 21.59
30	211	127 24 7.1	23 20.0	143.55	0.88	.00064471	23.8	15 24 25.68
31	212	128 21 32.1	20 45.1	143.57	0.82	.00063888	24.7	15 20 29.77
32	213	129 18 58.4	18 11.0	143.60	−0.76	.00063283	−25.6	15 16 33.86
NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0 ^h .0.								Diff. for 1 hour, − 9 ^s .8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.

SEMI-DIAMETER.

HORIZONTAL PARALLAX.

MERIDIAN PASSAGE.

AGE.

Noon.

Midnight.

Noon.

Diff. for
1 hour.

Midnight.

Diff. for
1 hour.

h m

m

d

3 41.1

4 22.7

5 5.1

5 49.2

6 36.1

7 26.8

8 21.9

9 21.3

10 23.7

11 26.9

12 28.7

13 27.6

14 23.2

15 15.7

16 6.2

16 55.6

17 44.7

18 34.2

19 24.3

20 14.8

21 5.2

21 55.0

22 43.5

23 30.3

21 55.0

22 43.5

23 30.3

21 55.0

22 43.5

23 30.3

21 55.0

22 43.5

23 30.3

21 55.0

22 43.5

23 30.3

21 55.0

22 43.5

23 30.3

21 55.0

22 43.5

23 30.3

21 55.0

22 43.5

23 30.3

21 55.0

22 43.5

23 30.3

21 55.0

22 43.5

23 30.3

21 55.0

22 43.5

23 30.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 1.					SUNDAY 3.				
0	10 13 40.81	1.8457	N. 5 33' 25.8"	11.262	0	11 42 48.91	1.8919	S. 3 46' 17.1"	11.793
1	10 15 31.54	1.8453	5 22 8.1	11.307	1	11 44 42.50	1.8945	3 58 4.5	11.788
2	10 17 22.25	1.8450	5 10 48.9	11.339	2	11 46 36.25	1.8971	4 9 51.6	11.782
3	10 19 12.94	1.8447	4 59 28.2	11.357	3	11 48 30.15	1.8997	4 21 38.3	11.775
4	10 21 3.61	1.8444	4 48 6.1	11.380	4	11 50 24.21	1.9034	4 33 24.6	11.767
5	10 22 54.27	1.8442	4 36 42.6	11.403	5	11 52 18.44	1.9059	4 45 10.3	11.758
6	10 24 44.91	1.8439	4 25 17.7	11.426	6	11 54 12.84	1.9081	4 56 55.5	11.748
7	10 26 35.54	1.8438	4 13 51.5	11.447	7	11 56 7.41	1.9110	5 8 40.1	11.738
8	10 28 26.17	1.8438	4 2 24.0	11.468	8	11 58 2.16	1.9141	5 20 24.1	11.728
9	10 30 16.80	1.8438	3 50 55.3	11.488	9	11 59 57.10	1.9172	5 32 7.5	11.717
10	10 32 7.43	1.8439	3 39 25.4	11.508	10	12 1 52.22	1.9203	5 43 50.1	11.704
11	10 33 58.07	1.8441	3 27 54.3	11.527	11	12 3 47.53	1.9234	5 55 32.0	11.691
12	10 35 48.72	1.8443	3 16 22.1	11.546	12	12 5 43.03	1.9267	6 7 13.1	11.677
13	10 37 39.38	1.8445	3 4 48.8	11.564	13	12 7 38.73	1.9300	6 18 53.3	11.662
14	10 39 30.06	1.8447	2 53 14.4	11.582	14	12 9 34.63	1.9334	6 30 32.6	11.647
15	10 41 20.75	1.8450	2 41 39.0	11.598	15	12 11 30.74	1.9369	6 42 10.9	11.630
16	10 43 11.46	1.8454	2 30 2.6	11.615	16	12 13 27.06	1.9404	6 53 48.2	11.613
17	10 45 2.20	1.8460	2 18 25.2	11.631	17	12 15 23.59	1.9440	7 5 24.5	11.596
18	10 46 52.98	1.8466	2 6 46.9	11.645	18	12 17 20.34	1.9476	7 16 59.7	11.577
19	10 48 43.79	1.8473	1 55 7.8	11.659	19	12 19 17.31	1.9513	7 28 33.7	11.557
20	10 50 34.64	1.8478	1 43 27.8	11.673	20	12 21 14.50	1.9552	7 40 6.5	11.537
21	10 52 25.53	1.8485	1 31 47.0	11.686	21	12 23 11.93	1.9592	7 51 38.1	11.516
22	10 54 16.46	1.8493	1 20 5.5	11.698	22	12 25 9.60	1.9633	8 3 8.4	11.493
23	10 56 7.44	1.8501	N. 1 8 23.2	11.711	23	12 27 7.51	1.9672	S. 8 14 37.3	11.470
SATURDAY 2.					MONDAY 4.				
0	10 57 58.47	1.8510	N. 0 56 40.2	11.729	0	12 29 5.66	1.9712	S. 8 26 4.8	11.446
1	10 59 49.56	1.8520	0 44 56.6	11.732	1	12 31 4.05	1.9754	8 37 30.8	11.431
2	11 1 40.71	1.8531	0 33 12.4	11.742	2	12 33 2.70	1.9796	8 48 55.3	11.396
3	11 3 31.93	1.8543	0 21 27.5	11.752	3	12 35 1.60	1.9838	9 0 18.3	11.370
4	11 5 23.21	1.8553	N. 0 9 42.1	11.760	4	12 37 0.75	1.9881	9 11 39.7	11.343
5	11 7 14.56	1.8565	S. 0 2 3.7	11.768	5	12 39 0.17	1.9926	9 22 59.4	11.313
6	11 9 5.99	1.8578	0 13 50.0	11.775	6	12 40 59.86	1.9971	9 34 17.3	11.283
7	11 10 57.50	1.8592	0 25 36.7	11.782	7	12 42 59.82	2.0016	9 45 33.4	11.253
8	11 12 49.09	1.8605	0 37 23.8	11.788	8	12 45 0.05	2.0062	9 56 47.7	11.222
9	11 14 40.76	1.8619	0 49 11.3	11.794	9	12 47 0.56	2.0109	10 8 0.1	11.190
10	11 16 32.52	1.8635	1 0 59.1	11.799	10	12 49 1.36	2.0157	10 19 10.5	11.157
11	11 18 24.38	1.8652	1 12 47.1	11.803	11	12 51 2.44	2.0204	10 30 18.9	11.123
12	11 20 16.34	1.8668	1 24 35.4	11.807	12	12 53 3.81	2.0253	10 41 25.3	11.088
13	11 22 8.40	1.8686	1 36 23.9	11.809	13	12 55 5.48	2.0303	10 52 29.5	11.052
14	11 24 0.57	1.8704	1 48 12.5	11.810	14	12 57 7.45	2.0353	11 3 31.5	11.015
15	11 25 52.85	1.8722	2 0 1.1	11.811	15	12 59 9.71	2.0403	11 14 31.3	10.977
16	11 27 45.24	1.8741	2 11 49.8	11.819	16	13 1 12.28	2.0454	11 25 28.8	10.937
17	11 29 37.74	1.8760	2 23 38.6	11.813	17	13 3 15.16	2.0506	11 36 23.8	10.897
18	11 31 30.36	1.8781	2 35 27.4	11.812	18	13 5 18.35	2.0558	11 47 16.4	10.856
19	11 33 23.11	1.8803	2 47 16.1	11.811	19	13 7 21.86	2.0619	11 58 6.5	10.814
20	11 35 15.99	1.8825	2 59 4.7	11.808	20	13 9 25.69	2.0685	12 8 54.1	10.771
21	11 37 9.01	1.8848	3 10 53.1	11.805	21	13 11 29.84	2.0719	12 19 39.0	10.726
22	11 39 2.17	1.8873	3 22 41.3	11.802	22	13 13 34.32	2.0774	12 30 21.2	10.680
23	11 40 55.47	1.8895	3 34 29.3	11.798	23	13 15 39.13	2.0830	12 41 0.6	10.633
24	11 42 48.91	1.8919	S. 3 46 17.1	11.793	24	13 17 44.28	2.0886	S. 12 51 37.2	10.586

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 5.					THURSDAY 7.				
0	13 17 44.28	2.0686	S. 12° 51' 37.2"	10.586	0	15 5 19.22	2.4049	S. 20° 1' 28.4"	6.811
1	13 19 49.76	2.0943	13 2 10.9	10.537	1	15 7 43.72	2.4118	20 8 13.7	6.698
2	13 21 55.59	2.1000	13 12 41.7	10.487	2	15 10 8.64	2.4188	20 14 52.2	6.585
3	13 24 1.76	2.1058	13 23 9.4	10.436	3	15 12 33.98	2.4257	20 21 23.9	6.470
4	13 26 8.28	2.1116	13 33 34.0	10.384	4	15 14 59.73	2.4325	20 27 48.6	6.352
5	13 28 15.15	2.1175	13 43 55.5	10.331	5	15 17 25.88	2.4393	20 34 6.2	6.234
6	13 30 22.38	2.1234	13 54 13.7	10.276	6	15 19 52.44	2.4461	20 40 16.7	6.115
7	13 32 29.96	2.1294	14 4 28.6	10.220	7	15 22 19.41	2.4528	20 46 20.0	5.993
8	13 34 37.91	2.1355	14 14 40.1	10.163	8	15 24 46.78	2.4595	20 52 15.9	5.870
9	13 36 46.22	2.1416	14 24 48.2	10.106	9	15 27 14.55	2.4662	20 58 4.4	5.747
10	13 38 54.90	2.1477	14 34 52.8	10.047	10	15 29 42.72	2.4728	21 3 45.5	5.622
11	13 41 3.95	2.1539	14 44 53.8	9.986	11	15 32 11.28	2.4793	21 9 19.0	5.494
12	13 43 13.37	2.1601	14 54 51.1	9.924	12	15 34 40.24	2.4859	21 14 44.8	5.365
13	13 45 23.16	2.1664	15 4 44.6	9.861	13	15 37 9.59	2.4924	21 20 2.8	5.236
14	13 47 33.34	2.1728	15 14 34.4	9.797	14	15 39 39.32	2.4988	21 25 13.1	5.106
15	13 49 43.90	2.1792	15 24 20.3	9.732	15	15 42 9.44	2.5052	21 30 15.5	4.973
16	13 51 54.85	2.1857	15 34 2.2	9.664	16	15 44 39.94	2.5114	21 35 9.9	4.839
17	13 54 6.18	2.1921	15 43 40.0	9.596	17	15 47 10.81	2.5177	21 39 56.2	4.704
18	13 56 17.90	2.1986	15 53 13.7	9.527	18	15 49 42.06	2.5239	21 44 34.4	4.567
19	13 58 30.01	2.2052	16 2 43.2	9.457	19	15 52 13.68	2.5300	21 49 4.3	4.429
20	14 0 42.52	2.2117	16 12 8.5	9.385	20	15 54 45.66	2.5359	21 53 25.9	4.291
21	14 2 55.42	2.2183	16 21 29.4	9.311	21	15 57 17.99	2.5418	21 57 39.2	4.151
22	14 5 8.72	2.2250	16 30 45.8	9.237	22	15 59 50.68	2.5477	22 1 44.0	4.009
23	14 7 22.42	2.2317	S. 16 39 57.8	9.162	23	16 2 23.72	2.5536	S. 22 5 40.3	3.867
WEDNESDAY 6.					FRIDAY 8.				
0	14 9 36.53	2.2385	S. 16 49 5.2	9.084	0	16 4 57.11	2.5593	S. 22 9 28.0	3.723
1	14 11 51.04	2.2452	16 58 7.9	9.005	1	16 7 30.84	2.5649	22 13 7.0	3.578
2	14 14 5.96	2.2520	17 7 5.8	8.925	2	16 10 4.90	2.5703	22 16 37.3	3.431
3	14 16 21.28	2.2587	17 15 58.9	8.844	3	16 12 39.28	2.5757	22 19 58.7	3.283
4	14 18 37.01	2.2656	17 24 47.1	8.762	4	16 15 13.99	2.5811	22 23 11.2	3.134
5	14 20 53.15	2.2725	17 33 30.3	8.678	5	16 17 49.02	2.5864	22 26 14.8	2.985
6	14 23 9.71	2.2794	17 42 8.4	8.592	6	16 20 24.36	2.5915	22 29 9.4	2.834
7	14 25 26.68	2.2863	17 50 41.3	8.505	7	16 23 0.00	2.5965	22 31 54.9	2.682
8	14 27 44.07	2.2932	17 59 9.0	8.417	8	16 25 35.94	2.6015	22 34 31.2	2.529
9	14 30 1.87	2.3002	18 7 31.4	8.327	9	16 28 12.18	2.6063	22 36 58.3	2.375
10	14 32 20.09	2.3072	18 15 48.3	8.236	10	16 30 48.70	2.6110	22 39 16.2	2.220
11	14 34 38.73	2.3143	18 23 59.7	8.144	11	16 33 25.50	2.6157	22 41 24.7	2.064
12	14 36 57.79	2.3212	18 32 5.6	8.051	12	16 36 2.58	2.6202	22 43 23.8	1.907
13	14 39 17.27	2.3282	18 40 5.8	7.955	13	16 38 39.92	2.6245	22 45 13.5	1.748
14	14 41 37.17	2.3351	18 48 0.2	7.858	14	16 41 17.52	2.6287	22 46 53.6	1.589
15	14 43 57.48	2.3420	18 55 48.8	7.760	15	16 43 55.37	2.6328	22 48 24.2	1.430
16	14 46 18.21	2.3491	19 3 31.4	7.660	16	16 46 33.46	2.6368	22 49 45.2	1.269
17	14 48 39.37	2.3562	19 11 8.0	7.559	17	16 49 11.79	2.6406	22 50 56.5	1.107
18	14 51 0.95	2.3632	19 18 38.5	7.457	18	16 51 50.34	2.6443	22 51 58.0	0.944
19	14 53 22.95	2.3702	19 26 2.8	7.353	19	16 54 29.11	2.6480	22 52 49.8	0.781
20	14 55 45.37	2.3772	19 33 20.8	7.248	20	16 57 8.10	2.6515	22 53 31.8	0.613
21	14 58 8.21	2.3841	19 40 32.5	7.141	21	16 59 47.29	2.6548	22 54 4.0	0.454
22	15 0 31.46	2.3910	19 47 37.7	7.032	22	17 2 26.68	2.6581	22 54 26.3	0.289
23	15 2 55.13	2.3980	19 54 36.4	6.922	23	17 5 6.26	2.6611	22 54 38.7	-0.194
24	15 5 19.22	2.4049	S. 20 1 28.4	6.811	24	17 7 46.01	2.6639	S. 22 54 41.2	-0.042

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 9.					MONDAY 11.				
0	17 7 46.01	2.6639	S. 22 54 41.2	+0.042	0	19 16 14.97	2.6358	S. 19 39 56.4	7.906
1	17 10 25.93	2.6667	22 54 33.7	0.209	1	19 18 53.01	2.6392	19 31 57.7	8.051
2	17 13 6.02	2.6695	22 54 16.1	0.377	2	19 21 30.83	2.6935	19 23 50.3	8.195
3	17 15 46.27	2.6730	22 53 48.5	0.544	3	19 24 8.43	2.6947	19 15 34.3	8.337
4	17 18 26.66	2.6743	22 53 10.8	0.712	4	19 26 45.79	2.6907	19 7 9.8	8.478
5	17 21 7.19	2.6766	22 52 23.0	0.880	5	19 29 22.91	2.6166	18 58 36.9	8.617
6	17 23 47.85	2.6787	22 51 25.2	1.048	6	19 31 59.78	2.6194	18 49 55.7	8.756
7	17 26 28.63	2.6806	22 50 17.2	1.216	7	19 34 36.40	2.6093	18 41 6.2	8.893
8	17 29 9.52	2.6822	22 48 59.0	1.388	8	19 37 12.76	2.6039	18 32 8.6	9.036
9	17 31 50.50	2.6838	22 47 30.6	1.557	9	19 39 48.87	2.5996	18 23 2.9	9.162
10	17 34 31.58	2.6854	22 45 52.1	1.727	10	19 42 24.71	2.5951	18 13 49.2	9.294
11	17 37 12.75	2.6867	22 44 3.4	1.897	11	19 45 0.28	2.5906	18 4 27.6	9.424
12	17 39 53.99	2.6879	22 42 4.5	2.067	12	19 47 35.58	2.5860	17 54 58.3	9.553
13	17 42 35.30	2.6889	22 39 55.4	2.237	13	19 50 10.60	2.5813	17 45 21.3	9.680
14	17 45 16.66	2.6898	22 37 36.1	2.407	14	19 52 45.34	2.5767	17 35 36.7	9.806
15	17 47 58.07	2.6906	22 35 6.5	2.577	15	19 55 19.80	2.5720	17 25 44.6	9.930
16	17 50 39.52	2.6911	22 32 26.8	2.747	16	19 57 53.98	2.5673	17 15 45.1	10.059
17	17 53 21.00	2.6915	22 29 36.9	2.917	17	20 0 27.86	2.5623	17 5 38.3	10.179
18	17 56 2.50	2.6917	22 26 36.8	3.087	18	20 3 1.45	2.5573	16 55 24.4	10.291
19	17 58 44.01	2.6919	22 23 26.5	3.256	19	20 5 34.74	2.5524	16 45 3.4	10.406
20	18 1 25.53	2.6919	22 20 6.1	3.425	20	20 8 7.74	2.5475	16 34 35.4	10.524
21	18 4 7.04	2.6917	22 13 35.5	3.594	21	20 10 40.44	2.5425	16 24 0.5	10.637
22	18 6 48.54	2.6914	22 12 54.8	3.763	22	20 13 12.84	2.5374	16 13 18.9	10.748
23	18 9 30.01	2.6909	S. 22 9 4.0	3.931	23	20 15 44.93	2.5329	S. 16 2 30.7	10.858
SUNDAY 10.					TUESDAY 12.				
0	18 12 11.45	2.6903	S. 22 5 3.1	4.099	0	20 18 16.71	2.5271	S. 15 51 35.9	10.967
1	18 14 52.85	2.6896	22 0 52.1	4.267	1	20 20 48.18	2.5219	15 40 34.7	11.073
2	18 17 34.20	2.6887	21 56 31.1	4.434	2	20 23 19.34	2.5168	15 29 27.2	11.178
3	18 20 15.49	2.6876	21 52 0.1	4.600	3	20 25 50.20	2.5116	15 18 13.4	11.281
4	18 22 56.71	2.6864	21 47 19.1	4.766	4	20 28 20.74	2.5064	15 6 53.5	11.382
5	18 25 37.86	2.6853	21 42 28.2	4.931	5	20 30 50.97	2.5012	14 55 27.6	11.480
6	18 28 18.93	2.6837	21 37 27.4	5.096	6	20 33 20.88	2.4959	14 43 55.9	11.577
7	18 30 59.90	2.6820	21 32 16.7	5.260	7	20 35 50.47	2.4906	14 32 18.4	11.673
8	18 33 40.77	2.6803	21 26 56.2	5.423	8	20 38 19.75	2.4853	14 20 35.2	11.766
9	18 36 21.54	2.6785	21 21 25.9	5.586	9	20 40 48.71	2.4800	14 8 46.5	11.857
10	18 39 2.19	2.6765	21 15 45.9	5.747	10	20 43 17.35	2.4747	13 56 52.4	11.947
11	18 41 42.72	2.6743	21 9 56.2	5.908	11	20 45 45.68	2.4695	13 44 52.9	12.035
12	18 44 23.11	2.6730	21 3 56.9	6.068	12	20 48 13.69	2.4642	13 32 48.2	12.120
13	18 47 3.36	2.6697	20 57 48.1	6.227	13	20 50 41.38	2.4588	13 20 38.5	12.203
14	18 49 43.47	2.6673	20 51 29.7	6.386	14	20 53 8.75	2.4536	13 8 23.8	12.286
15	18 52 23.43	2.6647	20 45 1.8	6.543	15	20 55 35.81	2.4483	12 56 4.2	12.368
16	18 55 3.23	2.6618	20 38 24.5	6.699	16	20 58 2.55	2.4430	12 43 39.9	12.444
17	18 57 42.85	2.6589	20 31 37.9	6.853	17	21 0 28.97	2.4377	12 31 10.9	12.521
18	19 0 22.30	2.6560	20 24 42.1	7.007	18	21 2 55.07	2.4324	12 18 37.4	12.595
19	19 3 1.57	2.6539	20 17 37.1	7.160	19	21 5 20.86	2.4272	12 5 59.5	12.667
20	19 5 40.65	2.6497	20 10 22.9	7.312	20	21 7 46.34	2.4220	11 53 17.3	12.737
21	19 8 19.54	2.6465	20 2 59.7	7.462	21	21 10 11.50	2.4168	11 40 31.0	12.806
22	19 10 58.23	2.6431	19 55 27.5	7.611	22	21 12 36.35	2.4116	11 27 40.6	12.872
23	19 13 36.71	2.6395	19 47 46.4	7.759	23	21 15 0.89	2.4064	11 14 46.3	12.937
24	19 16 14.97	2.6358	S. 19 39 56.4	7.906	24	21 17 25.12	2.4013	S. 11 1 48.1	13.001

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 13.					FRIDAY 15.				
0	^h 21 ^m 17 ^s 25.12	2.4013	S. 11° 1' 48.1"	13.001	0	^h 23 ^m 7 ^s 30.92	2.2058	N. 0° 0' 43.9"	13.966
1	21 19 49.04	2.3998	10 48 46.2	13.009	1	23 9 43.19	2.2039	0 14 41.3	13.948
2	21 22 12.66	2.3911	10 35 40.7	13.191	2	23 11 55.31	2.2007	0 28 37.6	13.928
3	21 24 35.97	2.3860	10 22 31.7	13.178	3	23 14 7.27	2.1981	0 42 32.7	13.908
4	21 26 58.98	2.3810	10 9 19.3	13.234	4	23 16 19.08	2.1956	0 56 26.5	13.888
5	21 29 21.69	2.3759	9 56 3.6	13.287	5	23 18 30.74	2.1933	1 10 19.0	13.869
6	21 31 44.09	2.3709	9 42 44.8	13.339	6	23 20 42.26	2.1908	1 24 10.0	13.837
7	21 34 6.20	2.3660	9 29 22.9	13.389	7	23 22 53.64	2.1885	1 37 59.4	13.811
8	21 36 28.01	2.3611	9 15 58.1	13.437	8	23 25 4.88	2.1863	1 51 47.3	13.784
9	21 38 49.53	2.3569	9 2 30.5	13.483	9	23 27 15.99	2.1841	2 5 33.5	13.756
10	21 41 10.76	2.3514	8 49 0.2	13.527	10	23 29 26.97	2.1819	2 19 18.0	13.726
11	21 43 31.70	2.3467	8 35 27.3	13.570	11	23 31 37.82	2.1798	2 33 0.6	13.694
12	21 45 52.36	2.3419	8 21 51.8	13.612	12	23 33 48.55	2.1778	2 46 41.3	13.662
13	21 48 12.73	2.3372	8 8 13.9	13.650	13	23 35 59.16	2.1759	3 0 20.1	13.629
14	21 50 32.82	2.3326	7 54 33.8	13.687	14	23 38 9.66	2.1741	3 13 56.8	13.594
15	21 52 52.64	2.3280	7 40 51.5	13.722	15	23 40 20.05	2.1722	3 27 31.4	13.558
16	21 55 12.18	2.3234	7 27 7.1	13.756	16	23 42 30.33	2.1704	3 41 3.8	13.529
17	21 57 31.45	2.3189	7 13 20.8	13.787	17	23 44 40.50	2.1687	3 54 34.0	13.493
18	21 59 50.45	2.3144	6 59 32.6	13.817	18	23 46 50.57	2.1671	4 8 1.8	13.443
19	22 2 9.18	2.3100	6 45 42.7	13.846	19	23 49 0.55	2.1655	4 21 27.2	13.403
20	22 4 27.65	2.3056	6 31 51.1	13.873	20	23 51 10.43	2.1639	4 34 50.2	13.362
21	22 6 45.85	2.3013	6 17 57.9	13.898	21	23 53 20.22	2.1625	4 48 10.7	13.320
22	22 9 3.80	2.2970	6 4 3.3	13.922	22	23 55 29.93	2.1611	5 1 28.6	13.276
23	22 11 21.49	2.2928	S. 5 50 7.3	13.943	23	23 57 39.55	2.1597	N. 5 14 43.8	13.231
THURSDAY 14.					SATURDAY 16.				
0	22 13 38.93	2.2886	S. 5 36 10.1	13.963	0	23 59 49.09	2.1584	N. 5 27 56.3	13.185
1	22 15 56.12	2.2845	5 22 11.8	13.981	1	0 1 58.56	2.1579	5 41 6.0	13.138
2	22 18 13.07	2.2805	5 8 12.4	13.997	2	0 4 7.96	2.1561	5 54 12.8	13.090
3	22 20 29.78	2.2765	4 54 12.1	14.019	3	0 6 17.29	2.1549	6 7 16.8	13.042
4	22 22 46.25	2.2725	4 40 10.9	14.026	4	0 8 26.55	2.1538	6 20 17.8	12.991
5	22 25 2.48	2.2686	4 26 9.0	14.037	5	0 10 35.74	2.1527	6 33 15.7	12.939
6	22 27 18.48	2.2648	4 12 6.5	14.047	6	0 12 44.87	2.1517	6 46 10.5	12.887
7	22 29 34.25	2.2610	3 58 3.4	14.056	7	0 14 53.95	2.1509	6 59 2.1	12.834
8	22 31 49.80	2.2573	3 43 59.8	14.063	8	0 17 2.98	2.1501	7 11 50.6	12.781
9	22 34 5.13	2.2537	3 29 55.9	14.068	9	0 19 11.96	2.1493	7 24 35.8	12.725
10	22 36 20.24	2.2501	3 15 51.7	14.071	10	0 21 20.89	2.1485	7 37 17.6	12.668
11	22 38 35.14	2.2465	3 1 47.4	14.073	11	0 23 29.78	2.1477	7 49 56.0	12.611
12	22 40 49.82	2.2430	2 47 43.0	14.073	12	0 25 38.62	2.1471	8 2 31.0	12.553
13	22 43 4.30	2.2396	2 33 38.6	14.073	13	0 27 47.43	2.1466	8 15 2.4	12.494
14	22 45 18.58	2.2363	2 19 34.3	14.070	14	0 29 56.21	2.1460	8 27 30.3	12.435
15	22 47 32.66	2.2330	2 5 30.2	14.067	15	0 32 4.95	2.1454	8 39 54.6	12.374
16	22 49 46.54	2.2297	1 51 26.3	14.062	16	0 34 13.66	2.1450	8 52 15.2	12.312
17	22 52 0.22	2.2264	1 37 22.8	14.054	17	0 36 22.35	2.1447	9 4 32.1	12.250
18	22 54 13.71	2.2233	1 23 19.8	14.046	18	0 38 31.02	2.1443	9 16 45.2	12.187
19	22 56 27.02	2.2203	1 9 17.3	14.037	19	0 40 39.67	2.1440	9 28 54.5	12.122
20	22 58 40.15	2.2173	0 55 15.4	14.025	20	0 42 48.30	2.1437	9 40 59.8	12.056
21	23 0 53.10	2.2144	0 41 14.3	14.012	21	0 44 56.91	2.1434	9 53 1.2	11.990
22	23 3 5.88	2.2116	0 27 14.0	13.997	22	0 47 5.51	2.1433	10 4 58.6	11.923
23	23 5 18.49	2.2087	S. 0 13 14.6	13.989	23	0 49 14.10	2.1432	10 16 51.9	11.855
24	23 7 30.92	2.2058	N. 0 0 43.9	13.966	24	0 51 22.69	2.1432	N. 10 28 41.2	11.787

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 17.					TUESDAY 19.				
0	h m s	2.1432	N.10° 28' 41.2"	11.787	0	h m s	2.1733	N.18° 21' 14.9"	7.054
1	0 53 31.28	2.1431	10 40 26.3	11.717	1	2 36 56.75	2.1743	18 28 51.1	7.553
2	0 55 39.86	2.1430	10 52 7.2	11.647	2	2 39 7.24	2.1753	18 36 21.3	7.453
3	0 57 48.44	2.1430	11 3 43.9	11.576	3	2 41 17.79	2.1763	18 43 45.5	7.352
4	0 59 57.02	2.1431	11 15 16.3	11.503	4	2 43 28.39	2.1779	18 51 3.6	7.250
5	1 2 5.61	2.1432	11 26 44.3	11.430	5	2 45 39.05	2.1782	18 58 15.5	7.147
6	1 4 14.21	2.1434	11 38 7.9	11.357	6	2 47 49.77	2.1791	19 5 21.3	7.045
7	1 6 22.82	2.1436	11 49 27.1	11.283	7	2 50 0.54	2.1800	19 12 20.9	6.942
8	1 8 31.44	2.1438	12 0 41.9	11.209	8	2 52 11.37	2.1810	19 19 14.3	6.838
9	1 10 40.08	2.1442	12 11 52.2	11.133	9	2 54 22.26	2.1819	19 26 1.5	6.734
10	1 12 48.74	2.1445	12 22 57.9	11.056	10	2 56 33.20	2.1826	19 32 42.4	6.630
11	1 14 57.42	2.1448	12 33 58.9	10.978	11	2 58 44.19	2.1837	19 39 17.1	6.526
12	1 17 6.11	2.1451	12 44 55.2	10.899	12	3 0 55.24	2.1846	19 45 45.5	6.420
13	1 19 14.83	2.1456	12 55 46.8	10.821	13	3 3 6.34	2.1854	19 52 7.5	6.314
14	1 21 23.58	2.1460	13 6 33.7	10.749	14	3 5 17.49	2.1862	19 58 23.2	6.209
15	1 23 32.35	2.1464	13 17 15.8	10.661	15	3 7 28.69	2.1871	20 4 32.6	6.103
16	1 25 41.15	2.1469	13 27 53.0	10.580	16	3 9 39.94	2.1879	20 10 35.6	5.997
17	1 27 49.98	2.1474	13 38 25.4	10.498	17	3 11 51.24	2.1888	20 16 32.2	5.889
18	1 29 58.84	2.1480	13 48 52.8	10.415	18	3 14 2.59	2.1896	20 22 22.3	5.782
19	1 32 7.74	2.1486	13 59 15.2	10.333	19	3 16 13.99	2.1903	20 28 6.0	5.674
20	1 34 16.68	2.1492	14 9 32.6	10.249	20	3 18 25.43	2.1910	20 33 43.2	5.566
21	1 36 25.65	2.1498	14 19 45.1	10.166	21	3 20 36.91	2.1917	20 39 13.9	5.458
22	1 38 34.66	2.1505	14 29 52.5	10.080	22	3 22 48.43	2.1924	20 44 38.2	5.350
23	1 40 43.71	2.1512	N.14° 39' 54.7"	9.993	23	3 25 0.00	2.1932	N.20° 49' 55.9"	5.241
MONDAY 18.					WEDNESDAY 20.				
0	1 42 52.81	2.1520	N.14° 49' 51.7"	9.907	0	3 27 11.61	2.1938	N.20° 55' 7.1"	5.132
1	1 45 1.95	2.1527	14 59 43.5	9.820	1	3 29 23.26	2.1944	21 0 11.7	5.022
2	1 47 11.13	2.1534	15 9 30.1	9.732	2	3 31 34.94	2.1950	21 5 9.8	4.913
3	1 49 20.36	2.1542	15 19 11.4	9.644	3	3 33 46.66	2.1956	21 10 1.3	4.803
4	1 51 29.64	2.1550	15 28 47.4	9.555	4	3 35 58.41	2.1962	21 14 46.2	4.692
5	1 53 38.96	2.1558	15 38 18.0	9.465	5	3 38 10.20	2.1967	21 19 24.4	4.582
6	1 55 48.33	2.1566	15 47 43.2	9.375	6	3 40 22.02	2.1973	21 23 56.0	4.472
7	1 57 57.75	2.1574	15 57 3.0	9.284	7	3 42 33.87	2.1977	21 28 21.0	4.361
8	2 0 7.22	2.1583	16 6 17.3	9.192	8	3 44 45.74	2.1981	21 32 39.3	4.249
9	2 2 16.75	2.1592	16 15 26.1	9.100	9	3 46 57.64	2.1985	21 36 50.9	4.137
10	2 4 26.33	2.1601	16 24 29.3	9.008	10	3 49 9.56	2.1988	21 40 55.8	4.026
11	2 6 35.96	2.1610	16 33 27.0	8.915	11	3 51 21.50	2.1992	21 44 54.0	3.915
12	2 8 45.65	2.1619	16 42 19.1	8.821	12	3 53 33.46	2.1995	21 48 45.6	3.804
13	2 10 55.39	2.1628	16 51 5.5	8.727	13	3 55 45.44	2.1997	21 52 30.5	3.692
14	2 13 5.19	2.1638	16 59 46.3	8.632	14	3 57 57.43	2.2000	21 56 8.6	3.579
15	2 15 15.05	2.1647	17 8 21.4	8.537	15	4 0 9.44	2.2002	21 59 30.9	3.466
16	2 17 24.96	2.1657	17 16 50.7	8.440	16	4 2 21.46	2.2004	22 3 4.5	3.354
17	2 19 34.93	2.1666	17 25 14.2	8.343	17	4 4 33.49	2.2005	22 6 22.4	3.242
18	2 21 44.95	2.1675	17 33 31.9	8.247	18	4 6 45.52	2.2006	22 9 33.5	3.129
19	2 23 55.03	2.1685	17 41 43.8	8.150	19	4 8 57.56	2.2007	22 12 37.9	3.017
20	2 26 5.17	2.1695	17 49 49.9	8.052	20	4 11 9.60	2.2007	22 15 35.5	2.903
21	2 28 15.37	2.1705	17 57 50.1	7.953	21	4 13 21.64	2.2007	22 18 26.3	2.790
22	2 30 25.63	2.1715	18 5 44.3	7.854	22	4 15 33.68	2.2006	22 21 10.3	2.677
23	2 32 35.95	2.1724	18 13 32.6	7.755	23	4 17 45.71	2.2004	22 23 47.5	2.564
24	2 34 46.32	2.1733	N.18° 21' 14.9"	7.654	24	4 19 57.73	2.2003	N.22° 26' 18.0"	2.452

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 21.					SATURDAY 23.				
0	4 19 57.73	2.9003	N.22° 26' 18.0"	2.459	0	6 4 35.97	2.1431	N.22° 14' 51.7"	2.654
1	4 22 9.75	2.9001	22 28 41.7	2.338	1	6 6 44.49	2.1408	22 11 57.3	2.958
2	4 24 21.75	2.1999	22 30 58.5	2.924	2	6 8 52.87	2.1386	22 8 56.7	3.081
3	4 26 33.74	2.1996	22 33 8.5	2.111	3	6 11 1.12	2.1363	22 5 50.0	3.164
4	4 28 45.71	2.1993	22 35 11.8	1.998	4	6 13 9.23	2.1341	22 2 37.1	3.267
5	4 30 57.66	2.1990	22 37 8.3	1.884	5	6 15 17.21	2.1318	21 59 18.0	3.369
6	4 33 9.59	2.1986	22 38 57.9	1.770	6	6 17 25.05	2.1294	21 55 52.8	3.471
7	4 35 21.49	2.1982	22 40 40.7	1.657	7	6 19 32.74	2.1270	21 52 21.5	3.572
8	4 37 33.37	2.1978	22 42 16.8	1.545	8	6 21 40.29	2.1246	21 48 44.2	3.673
9	4 39 45.22	2.1973	22 43 46.1	1.432	9	6 23 47.69	2.1222	21 45 0.8	3.773
10	4 41 57.04	2.1967	22 45 8.6	1.318	10	6 25 54.95	2.1197	21 41 11.4	3.873
11	4 44 8.82	2.1960	22 46 24.3	1.205	11	6 28 2.06	2.1172	21 37 16.0	3.972
12	4 46 20.56	2.1953	22 47 33.2	1.092	12	6 30 9.01	2.1146	21 33 14.7	4.071
13	4 48 32.26	2.1946	22 48 35.3	0.978	13	6 32 15.81	2.1121	21 29 7.5	4.169
14	4 50 43.92	2.1939	22 49 30.6	0.866	14	6 34 22.46	2.1095	21 24 54.4	4.267
15	4 52 55.53	2.1932	22 50 19.2	0.753	15	6 36 28.95	2.1068	21 20 35.4	4.365
16	4 55 7.10	2.1923	22 51 1.0	0.640	16	6 38 35.28	2.1042	21 16 10.6	4.462
17	4 57 18.61	2.1914	22 51 36.0	0.527	17	6 40 41.45	2.1016	21 11 40.0	4.558
18	4 59 30.07	2.1905	22 52 4.3	0.415	18	6 42 47.47	2.0990	21 7 3.7	4.653
19	5 1 41.47	2.1895	22 52 25.8	0.303	19	6 44 53.33	2.0962	21 2 21.6	4.749
20	5 3 52.81	2.1885	22 52 40.6	0.191	20	6 46 59.02	2.0934	20 57 33.8	4.844
21	5 6 4.09	2.1875	22 52 48.7	+0.079	21	6 49 4.54	2.0907	20 52 40.4	4.938
22	5 8 15.31	2.1865	22 52 50.1	-0.033	22	6 51 9.90	2.0879	20 47 41.3	5.032
23	5 10 26.47	2.1854	N.22° 52' 44.7"	0.146	23	6 53 15.09	2.0852	N.20° 42' 36.6"	5.124
FRIDAY 22.					SUNDAY 24.				
0	5 12 37.56	2.1842	N.22° 52' 32.6"	0.257	0	6 55 20.12	2.0824	N.20° 37' 26.4"	5.217
1	5 14 48.57	2.1829	22 52 13.8	0.368	1	6 57 24.98	2.0796	20 32 10.6	5.309
2	5 16 59.51	2.1817	22 51 48.4	0.479	2	6 59 29.67	2.0767	20 26 49.3	5.400
3	5 19 10.37	2.1803	22 51 16.3	0.590	3	7 1 34.18	2.0738	20 21 22.6	5.491
4	5 21 21.15	2.1789	22 50 37.6	0.701	4	7 3 38.52	2.0710	20 15 50.4	5.581
5	5 23 31.84	2.1775	22 49 52.2	0.812	5	7 5 42.70	2.0682	20 10 12.9	5.670
6	5 25 42.45	2.1761	22 49 0.2	0.922	6	7 7 46.71	2.0653	20 4 30.0	5.759
7	5 27 52.97	2.1746	22 48 1.6	1.032	7	7 9 50.54	2.0623	19 58 41.8	5.848
8	5 30 3.40	2.1731	22 46 56.4	1.141	8	7 11 54.19	2.0594	19 52 48.3	5.936
9	5 32 13.74	2.1715	22 45 44.7	1.250	9	7 13 57.67	2.0565	19 46 49.5	6.022
10	5 34 23.98	2.1698	22 44 26.4	1.360	10	7 16 0.97	2.0536	19 40 45.6	6.108
11	5 36 34.12	2.1682	22 43 1.5	1.469	11	7 18 4.10	2.0507	19 34 36.5	6.195
12	5 38 44.17	2.1666	22 41 30.1	1.577	12	7 20 7.05	2.0477	19 28 22.2	6.281
13	5 40 54.11	2.1648	22 39 52.2	1.686	13	7 22 9.82	2.0447	19 22 2.8	6.365
14	5 43 3.94	2.1630	22 38 7.8	1.794	14	7 24 12.42	2.0418	19 15 38.4	6.449
15	5 45 13.67	2.1612	22 36 16.9	1.901	15	7 26 14.84	2.0388	19 9 8.9	6.532
16	5 47 23.29	2.1593	22 34 19.6	2.008	16	7 28 17.08	2.0358	19 2 34.5	6.615
17	5 49 32.79	2.1574	22 32 15.9	2.115	17	7 30 19.14	2.0329	18 55 55.1	6.697
18	5 51 42.18	2.1555	22 30 5.8	2.222	18	7 32 21.03	2.0300	18 49 10.8	6.779
19	5 53 51.45	2.1535	22 27 49.3	2.328	19	7 34 22.74	2.0270	18 42 21.6	6.860
20	5 56 0.60	2.1515	22 25 26.4	2.434	20	7 36 24.27	2.0240	18 35 27.6	6.940
21	5 58 9.63	2.1495	22 22 57.2	2.540	21	7 38 25.62	2.0210	18 28 28.8	7.020
22	6 0 18.54	2.1474	22 20 21.6	2.645	22	7 40 26.79	2.0180	18 21 25.2	7.099
23	6 2 27.32	2.1453	22 17 39.8	2.749	23	7 42 27.78	2.0151	18 14 16.9	7.177
24	6 4 35.97	2.1431	N.22° 14' 51.7"	2.854	24	7 44 28.60	2.0122	N.18° 7' 3.9"	7.255

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 25.					WEDNESDAY 27.				
0	7 44 28.60	2.0122	N. 18 7 3.9	7.255	0	9 17 53.10	1.8892	N. 11 2 8.4	10.189
1	7 46 29.24	2.0092	17 59 46.3	7.332	1	9 19 46.33	1.8862	10 51 55.7	10.233
2	7 48 29.70	2.0062	17 52 24.1	7.408	2	9 21 39.45	1.8843	10 41 40.4	10.277
3	7 50 29.98	2.0032	17 44 57.3	7.484	3	9 23 32.45	1.8825	10 31 22.4	10.321
4	7 52 30.09	2.0003	17 37 26.0	7.559	4	9 25 25.35	1.8807	10 21 1.9	10.363
5	7 54 30.02	1.9973	17 29 50.2	7.633	5	9 27 18.14	1.8789	10 10 38.9	10.404
6	7 56 29.77	1.9944	17 22 10.0	7.707	6	9 29 10.82	1.8772	10 0 13.4	10.446
7	7 58 29.35	1.9915	17 14 25.4	7.780	7	9 31 3.40	1.8755	9 49 45.4	10.487
8	8 0 28.75	1.9886	17 6 36.4	7.852	8	9 32 55.88	1.8738	9 39 15.0	10.526
9	8 2 27.98	1.9857	16 58 43.1	7.924	9	9 34 48.26	1.8722	9 28 42.3	10.564
10	8 4 27.04	1.9828	16 50 45.5	7.995	10	9 36 40.54	1.8706	9 18 7.3	10.603
11	8 6 25.92	1.9799	16 42 43.7	8.065	11	9 38 32.73	1.8691	9 7 30.0	10.641
12	8 8 24.63	1.9771	16 34 37.7	8.135	12	9 40 24.83	1.8676	8 56 50.4	10.678
13	8 10 23.17	1.9742	16 26 27.5	8.204	13	9 42 16.84	1.8661	8 46 8.6	10.714
14	8 12 21.54	1.9713	16 18 13.2	8.272	14	9 44 8.76	1.8647	8 35 24.7	10.750
15	8 14 19.73	1.9685	16 9 54.9	8.339	15	9 46 0.60	1.8633	8 24 38.6	10.785
16	8 16 17.76	1.9657	16 1 32.5	8.407	16	9 47 52.36	1.8620	8 13 50.5	10.819
17	8 18 15.62	1.9630	15 53 6.1	8.473	17	9 49 44.04	1.8607	8 3 0.3	10.853
18	8 20 13.32	1.9602	15 44 35.7	8.539	18	9 51 35.65	1.8595	7 52 8.1	10.886
19	8 22 10.85	1.9574	15 36 1.4	8.603	19	9 53 27.18	1.8583	7 41 14.0	10.918
20	8 24 8.21	1.9547	15 27 23.3	8.667	20	9 55 18.64	1.8572	7 30 17.9	10.951
21	8 26 5.41	1.9520	15 18 41.3	8.731	21	9 57 10.04	1.8561	7 19 19.9	10.983
22	8 28 2.45	1.9492	15 9 55.5	8.794	22	9 59 1.37	1.8550	7 8 20.0	11.013
23	8 29 59.32	1.9465	N. 15 1 6.0	8.857	23	10 0 52.64	1.8539	N. 6 57 18.4	11.042
TUESDAY 26.					THURSDAY 28.				
0	8 31 56.03	1.9438	N. 14 52 12.7	8.918	0	10 2 43.84	1.8529	N. 6 46 15.0	11.071
1	8 33 52.58	1.9412	14 43 15.8	8.978	1	10 4 34.99	1.8521	6 35 9.9	11.099
2	8 35 48.98	1.9387	14 34 15.3	9.039	2	10 6 26.09	1.8512	6 24 3.1	11.127
3	8 37 45.22	1.9361	14 25 11.1	9.099	3	10 8 17.13	1.8503	6 12 54.6	11.154
4	8 39 41.31	1.9336	14 16 3.4	9.157	4	10 10 8.12	1.8495	6 1 44.6	11.180
5	8 41 37.25	1.9310	14 6 52.2	9.215	5	10 11 59.07	1.8488	5 50 33.0	11.207
6	8 43 33.03	1.9284	13 57 37.6	9.272	6	10 13 49.98	1.8482	5 39 19.8	11.233
7	8 45 28.66	1.9259	13 48 19.5	9.329	7	10 15 40.85	1.8475	5 28 5.1	11.257
8	8 47 24.14	1.9235	13 38 58.1	9.385	8	10 17 31.68	1.8468	5 16 49.0	11.280
9	8 49 19.48	1.9211	13 29 33.3	9.441	9	10 19 22.47	1.8462	5 5 31.5	11.303
10	8 51 14.67	1.9187	13 20 5.2	9.495	10	10 21 13.23	1.8458	4 54 12.6	11.326
11	8 53 9.72	1.9163	13 10 33.9	9.549	11	10 23 3.97	1.8454	4 42 52.4	11.348
12	8 55 4.63	1.9139	13 0 59.3	9.603	12	10 24 54.68	1.8449	4 31 30.9	11.369
13	8 56 59.39	1.9116	12 51 21.5	9.656	13	10 26 45.36	1.8446	4 20 8.1	11.390
14	8 58 54.02	1.9093	12 41 40.6	9.707	14	10 28 36.03	1.8443	4 8 44.1	11.409
15	9 0 48.51	1.9071	12 31 56.7	9.757	15	10 30 26.68	1.8441	3 57 19.0	11.428
16	9 2 42.87	1.9048	12 22 9.7	9.808	16	10 32 17.32	1.8439	3 45 52.7	11.446
17	9 4 37.09	1.9026	12 12 19.7	9.859	17	10 34 7.95	1.8437	3 34 25.4	11.464
18	9 6 31.18	1.9004	12 2 26.6	9.909	18	10 35 58.57	1.8436	3 22 57.0	11.482
19	9 8 25.14	1.8983	11 52 30.6	9.957	19	10 37 49.18	1.8436	3 11 27.6	11.499
20	9 10 18.98	1.8963	11 42 31.8	10.004	20	10 39 39.80	1.8437	2 59 57.2	11.515
21	9 12 12.69	1.8943	11 32 30.1	10.052	21	10 41 30.42	1.8437	2 48 25.8	11.530
22	9 14 6.28	1.8922	11 22 25.6	10.098	22	10 43 21.04	1.8438	2 36 53.6	11.544
23	9 15 59.75	1.8902	11 12 18.4	10.143	23	10 45 11.67	1.8440	2 25 20.5	11.558
24	9 17 53.10	1.8882	N. 11 2 8.4	10.189	24	10 47 2.32	1.8442	N. 2 13 46.6	11.572

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 29.					SUNDAY 31.				
0	10 47 2.32	1.8442	N. 2 13 46.6	11.572	0	12 16 52.49	1.9213	S. 7 4 2.8	11.400
1	10 48 52.98	1.8445	2 2 11.9	11.584	1	12 18 47.86	1.9244	7 15 26.2	11.378
2	10 50 43.66	1.8448	1 50 36.5	11.596	2	12 20 43.42	1.9275	7 26 48.2	11.355
3	10 52 34.35	1.8451	1 39 0.4	11.607	3	12 22 39.16	1.9306	7 38 8.8	11.332
4	10 54 25.07	1.8456	1 27 23.6	11.618	4	12 24 35.09	1.9338	7 49 28.0	11.308
5	10 56 15.82	1.8461	1 15 46.2	11.628	5	12 26 31.22	1.9372	8 0 45.8	11.284
6	10 58 6.60	1.8467	1 4 8.2	11.637	6	12 28 27.56	1.9406	8 12 2.1	11.258
7	10 59 57.42	1.8473	0 52 29.7	11.646	7	12 30 24.10	1.9440	8 23 16.8	11.232
8	11 1 48.27	1.8479	0 40 50.7	11.654	8	12 32 20.84	1.9474	8 34 29.9	11.205
9	11 3 39.16	1.8486	0 29 11.2	11.662	9	12 34 17.79	1.9510	8 45 41.4	11.177
10	11 5 30.10	1.8493	0 17 31.3	11.668	10	12 36 14.96	1.9546	8 56 51.2	11.148
11	11 7 21.08	1.8501	N. 0 5 51.1	11.674	11	12 38 12.35	1.9582	9 7 59.2	11.118
12	11 9 12.11	1.8510	S. 0 5 49.5	11.679	12	12 40 9.95	1.9619	9 19 5.3	11.087
13	11 11 3.20	1.8520	0 17 30.4	11.683	13	12 42 7.78	1.9657	9 30 9.6	11.056
14	11 12 54.35	1.8529	0 29 11.5	11.687	14	12 44 5.84	1.9696	9 41 12.0	11.024
15	11 14 45.55	1.8539	0 40 52.8	11.690	15	12 46 4.13	1.9734	9 52 12.5	10.991
16	11 16 36.82	1.8551	0 52 34.3	11.693	16	12 48 2.65	1.9773	10 3 10.9	10.956
17	11 18 28.16	1.8563	1 4 16.0	11.696	17	12 50 1.41	1.9814	10 14 7.2	10.922
18	11 20 19.58	1.8576	1 15 57.8	11.697	18	12 52 0.42	1.9855	10 25 1.5	10.887
19	11 22 11.07	1.8588	1 27 39.6	11.697	19	12 53 59.67	1.9896	10 35 53.6	10.849
20	11 24 2.64	1.8601	1 39 21.4	11.697	20	12 55 59.17	1.9938	10 46 43.4	10.811
21	11 25 54.28	1.8614	1 51 3.2	11.696	21	12 57 58.93	1.9981	10 57 30.9	10.772
22	11 27 46.01	1.8629	2 2 44.9	11.694	22	12 59 58.94	2.0023	11 8 16.1	10.733
23	11 29 37.83	1.8644	S. 2 14 26.5	11.691	23	13 1 59.21	2.0067	S. 11 18 58.9	10.693
SATURDAY 30.					MONDAY, AUGUST 1.				
0	11 31 29.74	1.8660	S. 2 26 7.9	11.688	0	13 3 59.74	2.0111	S. 11 29 33.3	10.652
1	11 33 21.75	1.8677	2 37 49.1	11.685	PHASES OF THE MOON.				
2	11 35 13.86	1.8693	2 49 30.1	11.681					
3	11 37 6.07	1.8711	3 1 10.8	11.676					
4	11 38 58.39	1.8729	3 12 51.2	11.670					
5	11 40 50.82	1.8747	3 24 31.2	11.663	<div> <div>d</div> <div>h</div> <div>m</div> </div> <div> ☾ First Quarter, . . . 4 5 16.1 </div> <div> ○ Full Moon, . . . 11 2 13.5 </div> <div> ☾ Last Quarter, . . 17 17 33.8 </div> <div> ● New Moon, . . . 25 17 19.0 </div>				
6	11 42 43.35	1.8765	3 36 10.8	11.656					
7	11 44 36.00	1.8786	3 47 49.9	11.648					
8	11 46 28.78	1.8807	3 59 28.5	11.639					
9	11 48 21.68	1.8828	4 11 6.6	11.630	<div> <div>d</div> <div>h</div> </div> <div> ☾ Perigee, 11 13.6 </div> <div> ☾ Apogee, 25 19.9 </div>				
10	11 50 14.71	1.8849	4 22 44.1	11.620					
11	11 52 7.87	1.8871	4 34 21.0	11.609					
12	11 54 1.16	1.8893	4 45 57.2	11.597					
13	11 55 54.59	1.8917	4 57 32.7	11.585					
14	11 57 48.16	1.8941	5 9 7.4	11.572					
15	11 59 41.88	1.8966	5 20 41.3	11.558					
16	12 1 35.75	1.8991	5 32 14.3	11.543					
17	12 3 29.77	1.9017	5 43 46.5	11.529					
18	12 5 23.95	1.9043	5 55 17.8	11.513					
19	12 7 18.29	1.9070	6 6 48.1	11.496					
20	12 9 12.79	1.9097	6 18 17.3	11.478					
21	12 11 7.45	1.9125	6 29 45.4	11.459					
22	12 13 2.29	1.9154	6 41 12.4	11.440					
23	12 14 57.30	1.9183	6 52 38.2	11.420					
24	12 16 52.49	1.9213	S. 7 4 2.8	11.400					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	53 46 36	3404	55 8 48	3399	56 31 6	3392	57 53 32	3386
	Spica	E.	48 51 6	3047	47 21 51	3041	45 52 29	3036	44 23 1	3030
	Antares	E.	94 21 1	3049	92 51 49	3043	91 22 30	3038	89 53 4	3032
2	Sun	W.	64 47 43	3346	66 11 1	3337	67 34 30	3327	68 58 10	3317
	Spica	E.	36 53 46	2997	35 23 29	2989	33 53 2	2981	32 22 26	2973
	Antares	E.	82 23 52	2996	80 53 34	2987	79 23 5	2979	77 52 26	2969
3	Sun	W.	75 59 30	3961	77 24 33	3948	78 49 45	3935	80 15 13	3921
	Regulus	W.	29 52 31	2984	31 23 4	2965	32 54 0	2947	34 25 19	2930
	Antares	E.	70 16 6	2918	68 44 10	2906	67 11 59	2894	65 39 33	2883
4	Sun	W.	87 26 42	3148	88 53 53	3133	90 21 23	3116	91 49 13	3100
	Regulus	W.	42 7 17	2846	43 40 45	2839	45 14 35	2811	46 48 48	2794
	Antares	E.	57 53 22	2816	56 19 15	2802	54 44 50	2788	53 10 6	2773
5	Sun	W.	99 13 33	3012	100 43 31	2994	102 13 51	2975	103 44 35	2957
	Regulus	W.	54 45 35	2706	56 22 7	2688	57 59 3	2669	59 36 24	2651
	Antares	E.	45 11 28	2695	43 34 42	2680	41 57 35	2663	40 20 6	2647
	α Aquilæ	E.	98 29 37	3140	97 2 16	3120	95 34 31	3100	94 6 21	3080
6	Sun	W.	111 24 15	2859	112 57 26	2839	114 31 3	2820	116 5 5	2800
	Regulus	W.	67 49 27	2557	69 29 21	2538	71 9 41	2519	72 50 28	2500
	Antares	E.	32 7 13	2567	30 27 33	2553	28 47 33	2538	27 7 13	2524
	α Aquilæ	E.	86 39 45	2990	85 9 20	2974	83 38 35	2958	82 7 30	2944
7	Sun	W.	124 1 48	2700	125 38 28	2681	127 15 34	2661	128 53 6	2642
	Regulus	W.	81 21 4	2405	83 4 32	2386	84 48 27	2367	86 32 49	2348
	Spica	W.	27 17 36	2401	29 1 10	2380	30 45 13	2360	32 29 45	2341
	α Aquilæ	E.	74 27 45	2882	72 55 3	2873	71 22 9	2855	69 49 5	2838
8	Regulus	W.	95 21 16	2260	97 8 15	2243	98 55 39	2227	100 43 27	2210
	Spica	W.	41 19 21	2248	43 6 37	2231	44 54 19	2213	46 42 27	2196
	α Aquilæ	E.	62 2 18	2251	60 28 56	2236	58 55 41	2224	57 22 36	2216
	Fomalhaut	E.	68 17 24	2710	86 40 58	2695	85 4 11	2681	83 27 5	2668
9	Spica	W.	55 49 9	2120	57 39 38	2106	59 30 28	2093	61 21 38	2081
	α Aquilæ	E.	49 42 17	2289	48 11 51	2269	46 42 14	2254	45 13 33	2239
	Fomalhaut	E.	75 17 53	2624	73 39 31	2601	72 1 4	2618	70 22 34	2618
	α Pegasi	E.	93 38 8	2250	91 50 55	2237	90 3 22	2223	88 15 29	2211
10	Spica	W.	70 42 0	2026	72 34 53	2018	74 27 59	2010	76 21 17	2003
	Antares	W.	25 22 49	2068	27 14 37	2054	29 6 47	2043	30 59 16	2031
	Fomalhaut	E.	62 11 4	2653	60 33 21	2639	58 55 59	2627	57 19 2	2709
	α Pegasi	E.	79 11 57	2164	77 22 35	2157	75 33 3	2152	73 43 23	2148
11	Spica	W.	85 50 16	1978	87 44 25	1975	89 38 38	1974	91 32 53	1974
	Antares	W.	40 25 15	1995	42 18 57	1991	44 12 45	1988	46 6 38	1986
	Fomalhaut	E.	49 23 35	2392	47 51 6	2346	46 19 46	2309	44 49 45	2361
	α Pegasi	E.	64 34 1	2144	62 44 9	2148	60 54 23	2153	59 4 44	2159
	Saturn	E.	112 55 51	2019	111 2 46	2016	109 9 36	2013	107 16 22	2011
12	Spica	W.	101 4 7	1980	102 58 13	1964	104 52 13	1968	106 46 6	1963

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	59° 16' 5"	3379	60° 38' 46"	3371	62° 1' 36"	3363	63° 24' 35"	3355
	Spica	E.	42 53 26	3025	41 23 44	3018	39 53 53	3011	38 23 54	3004
	Antares	E.	88 23 31	3025	86 53 49	3018	85 23 59	3011	83 54 0	3004
2	Sun	W.	70 22 2	3306	71 46 6	3295	73 10 23	3284	74 34 53	3273
	Spica	E.	30 51 39	2964	29 20 41	2956	27 49 33	2947	26 18 14	2938
	Antares	E.	76 21 35	2960	74 50 32	2950	73 19 17	2939	71 47 48	2929
3	Sun	W.	81 40 57	3208	83 6 57	3193	84 33 14	3178	85 59 49	3163
	Regulus	W.	35 57 0	2913	37 29 2	2897	39 1 25	2880	40 34 10	2869
	Antares	E.	64 6 52	2970	62 33 55	2857	61 0 41	2844	59 27 10	2831
4	Sun	W.	93 17 23	3083	94 45 53	3066	96 14 44	3048	97 43 57	3030
	Regulus	W.	48 23 24	2777	49 58 22	2760	51 33 43	2748	53 9 27	2734
	Antares	E.	51 35 3	2758	49 59 40	2743	48 23 57	2727	46 47 53	2711
5	Sun	W.	105 15 42	2938	106 47 13	2918	108 19 9	2899	109 51 29	2879
	Regulus	W.	61 14 10	2639	62 52 21	2614	64 30 57	2595	66 9 59	2576
	Antares	E.	38 42 15	2639	37 4 3	2615	35 25 29	2599	33 46 32	2583
	α Aquilæ	E.	92 37 47	3061	91 8 50	3043	89 39 31	3025	88 9 49	3007
6	Sun	W.	117 39 33	2780	119 14 27	2760	120 49 48	2740	122 25 35	2720
	Regulus	W.	74 31 41	2480	76 13 22	2469	77 55 29	2443	79 38 3	2424
	Antares	E.	25 26 33	2511	23 45 35	2500	22 4 22	2491	20 22 56	2484
	α Aquilæ	E.	80 36 7	2930	79 4 26	2916	77 32 28	2904	76 0 14	2892
7	Sun	W.	130 31 4	2923	132 9 28	2904	133 48 18	2885	135 27 33	2866
	Regulus	W.	88 17 38	2331	90 2 53	2319	91 48 35	2294	93 34 43	2277
	Spica	W.	34 14 45	2399	36 0 13	2309	37 46 9	2294	39 32 32	2286
	α Aquilæ	E.	68 15 52	2953	66 42 33	2949	65 9 9	2948	63 35 43	2948
8	Regulus	W.	102 31 39	2194	104 20 15	2180	106 9 13	2165	107 58 33	2151
	Spica	W.	48 31 0	2180	50 19 57	2165	52 9 18	2149	53 59 2	2134
	α Aquilæ	E.	55 49 46	2990	54 17 14	2998	52 45 5	2930	51 13 24	2957
	Fomalhaut	E.	81 49 42	2656	80 12 3	2646	78 34 11	2638	76 56 7	2630
9	Spica	W.	63 13 7	2068	65 4 55	2057	66 57 0	2046	68 49 22	2036
	α Aquilæ	E.	43 45 57	3191	42 19 37	3185	40 54 44	3151	39 31 31	3140
	Fomalhaut	E.	68 44 4	2621	67 5 37	2605	65 27 16	2639	63 49 4	2640
	α Pegasi	E.	86 27 18	2900	84 38 50	2189	82 50 6	2180	81 1 8	2171
10	Spica	W.	78 14 47	1996	80 8 27	1991	82 2 16	1986	83 56 13	1982
	Antares	W.	32 52 2	2022	34 45 2	2014	36 38 15	2006	38 31 40	2000
	Fomalhaut	E.	55 42 34	2735	54 6 41	2766	52 31 29	2803	50 57 5	2845
	α Pegasi	E.	71 53 37	2145	70 3 46	2143	68 13 52	2141	66 23 56	2142
11	Spica	W.	93 27 9	1973	95 21 26	1974	97 15 42	1975	99 9 56	1977
	Antares	W.	48 0 34	1986	49 54 31	1985	51 48 29	1985	53 42 27	1986
	Fomalhaut	E.	43 21 12	3163	41 54 18	3257	40 29 16	3365	39 6 19	3487
	α Pegasi	E.	57 15 15	2167	55 25 58	2176	53 36 55	2188	51 48 10	2203
	Saturn	E.	105 23 5	2010	103 29 47	2011	101 36 30	2012	99 43 15	2014
12	Spica	W.	108 39 51	1999	110 33 27	2006	112 26 52	2014	114 20 5	2022

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
12	Antares	W.	55° 36' 23"	1989	57° 30' 15"	1992	59° 24' 2"	1996	61° 17' 43"	2001
	α Pegasi	E.	49 59 47	2219	48 11 48	2237	46 24 16	2259	44 37 16	2283
	α Arietis	E.	92 9 44	2004	90 16 16	2008	88 22 54	2012	86 29 39	2017
	Saturn	E.	97 50 3	2017	95 56 55	2020	94 3 52	2025	92 10 56	2030
	Mars	E.	101 39 40	2192	99 51 0	2195	98 2 25	2200	96 13 57	2204
	Jupiter	E.	107 1 4	2034	105 8 23	2037	103 15 47	2042	101 23 18	2046
13	Antares	W.	70 43 48	2036	72 36 26	2045	74 28 50	2055	76 20 59	2066
	α Arietis	E.	77 5 52	2056	75 13 45	2066	73 21 53	2076	71 30 17	2087
	Saturn	E.	82 48 38	2066	80 56 47	2076	79 5 11	2086	77 13 50	2097
	Mars	E.	87 13 55	2242	85 26 30	2252	83 39 20	2262	81 52 25	2273
	Jupiter	E.	92 3 12	2083	90 11 47	2092	88 20 36	2103	86 29 41	2113
	Venus	E.	107 23 29	2326	105 38 8	2336	103 53 1	2346	102 8 9	2357
	Aldebaran	E.	110 5 52	2056	108 13 45	2064	106 21 51	2074	104 30 12	2084
14	Antares	W.	85 37 23	2196	87 27 43	2139	89 17 42	2153	91 7 20	2169
	α Aquilæ	W.	39 39 29	3416	41 1 27	3336	42 24 57	3268	43 49 46	3209
	α Arietis	E.	62 16 56	2153	60 27 18	2168	58 38 2	2184	56 49 10	2200
	Saturn	E.	68 1 35	2161	66 12 8	2174	64 23 2	2189	62 34 18	2204
	Mars	E.	73 2 10	2237	71 17 5	2251	69 32 20	2266	67 47 57	2282
	Jupiter	E.	77 19 24	2174	75 30 18	2188	73 41 33	2203	71 53 10	2218
	Venus	E.	93 28 9	2423	91 45 7	2437	90 2 25	2453	88 20 5	2468
	Aldebaran	E.	95 16 7	2143	93 26 14	2157	91 36 42	2171	89 47 31	2186
15	Antares	W.	100 9 48	2246	101 57 7	2262	103 44 2	2279	105 30 32	2296
	α Aquilæ	W.	51 8 16	3096	52 37 56	3005	54 8 2	2968	55 38 30	2974
	α Arietis	E.	47 51 9	2289	46 4 54	2309	44 19 7	2329	42 33 50	2350
	Saturn	E.	53 36 35	2288	51 50 18	2306	50 4 27	2324	48 19 3	2343
	Mars	E.	59 11 44	2464	57 29 40	2489	55 48 1	2499	54 6 47	2518
	Jupiter	E.	62 56 54	2296	61 10 49	2312	59 25 9	2331	57 39 55	2348
	Venus	E.	79 54 6	2552	78 14 5	2570	76 34 29	2588	74 55 17	2606
	Aldebaran	E.	80 47 15	2264	79 0 22	2281	77 13 54	2298	75 27 51	2315
	Sun	E.	124 57 55	2543	123 17 42	2561	121 37 53	2578	119 58 28	2596
16	α Aquilæ	W.	63 13 47	2950	64 45 3	2950	66 16 19	2952	67 47 32	2956
	Fomalhaut	W.	39 19 1	3752	40 34 53	3674	41 52 8	3606	43 10 36	3547
	Saturn	E.	39 38 57	2442	37 56 22	2464	36 14 18	2486	34 32 45	2508
	Mars	E.	45 47 0	2611	44 8 20	2629	42 30 5	2649	40 52 16	2669
	Jupiter	E.	48 59 59	2436	47 17 16	2455	45 34 59	2473	43 53 8	2491
	Aldebaran	E.	66 43 56	2403	65 0 26	2422	63 17 22	2440	61 34 44	2458
	Venus	E.	66 45 35	2699	65 8 54	2719	63 32 39	2738	61 56 49	2756
	Sun	E.	111 47 29	2687	110 10 31	2705	108 33 58	2724	106 57 50	2742
17	α Aquilæ	W.	75 21 50	2993	76 52 11	3003	78 22 19	3014	79 52 14	3026
	Fomalhaut	W.	49 56 15	3360	51 19 17	3338	52 42 44	3319	54 6 33	3304
	α Pegasi	W.	27 44 9	3182	29 10 40	3131	30 38 12	3090	32 6 34	3057
	Mars	E.	32 49 48	2768	31 14 38	2788	29 39 55	2809	28 5 39	2830
	Jupiter	E.	35 30 18	2585	33 51 2	2604	32 12 12	2623	30 33 48	2642
	Aldebaran	E.	53 8 4	2551	51 28 2	2570	49 48 26	2589	48 9 16	2608
	Venus	E.	54 3 53	2851	52 30 31	2870	50 57 34	2890	49 25 2	2909
	Sun	E.	99 3 14	2835	97 29 31	2852	95 56 11	2870	94 23 14	2888
18	α Aquilæ	W.	87 17 58	3092	88 46 17	3107	90 14 18	3123	91 42 0	3138

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Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXh.	P. L. of Diff.
12	Antares W.	63° 11' 15"	2006	65° 4' 40"	2013	66° 57' 54"	2020	68° 50' 57"	2028
	α Pegasi E.	42 50 51	2311	41 5 7	2342	39 20 9	2378	37 36 3	2418
	α Arietis E.	84 36 32	2024	82 43 35	2030	80 50 48	2038	78 58 13	2047
	Saturn E.	90 18 8	2035	88 25 20	2042	86 33 0	2050	84 40 43	2057
	Mars E.	94 25 36	2210	92 37 24	2218	90 49 23	2225	89 1 33	2233
	Jupiter E.	99 30 56	2052	97 38 43	2059	95 46 41	2066	93 54 50	2075
13	Antares W.	78 12 51	2077	80 4 26	2088	81 55 44	2100	83 46 43	2113
	α Arietis E.	69 38 58	2099	67 47 58	2119	65 57 17	2125	64 6 56	2139
	Saturn E.	75 22 46	2109	73 32 0	2120	71 41 32	2133	69 51 23	2147
	Mars E.	80 5 46	2225	78 19 24	2227	76 33 20	2210	74 47 35	2234
	Jupiter E.	84 39 2	2124	82 48 40	2138	80 58 36	2148	79 8 50	2161
	Venus E.	100 23 33	2369	98 39 14	2382	96 55 13	2395	95 11 31	2409
	Aldebaran E.	102 38 48	2024	100 47 40	2106	98 56 50	2118	97 6 19	2131
14	Antares W.	92 56 35	2183	94 45 28	2198	96 33 58	2214	98 22 5	2220
	α Aquilæ W.	45 15 45	3158	46 42 44	3116	48 10 34	3081	49 39 7	3052
	α Arietis E.	55 0 42	2217	53 12 40	2234	51 25 3	2251	49 37 52	2270
	Saturn E.	60 45 57	2220	58 57 59	2237	57 10 26	2253	55 23 18	2270
	Mars E.	66 3 56	2328	64 20 18	2414	62 37 3	2431	60 54 12	2447
	Jupiter E.	70 5 9	2223	68 17 31	2248	66 30 15	2264	64 43 23	2280
	Venus E.	86 38 7	2485	84 56 32	2501	83 15 20	2517	81 34 31	2535
	Aldebaran E.	87 58 42	2201	86 10 16	2216	84 22 12	2232	82 34 32	2247
15	Antares W.	107 16 37	2213	109 2 17	2230	110 47 33	2247	112 32 24	2265
	α Aquilæ W.	57 9 15	2265	58 40 12	2258	60 11 18	2252	61 42 31	2250
	α Arietis E.	40 49 3	2371	39 4 47	2394	37 21 4	2417	35 37 54	2441
	Saturn E.	46 34 6	2362	44 49 36	2381	43 5 34	2401	41 22 1	2422
	Mars E.	52 25 59	2536	50 45 36	2554	49 5 38	2573	47 26 6	2592
	Jupiter E.	55 55 6	2365	54 10 41	2382	52 26 41	2401	50 43 7	2419
	Venus E.	73 16 30	2624	71 38 8	2643	70 0 12	2662	68 22 41	2681
	Aldebaran E.	73 42 13	2332	71 57 0	2350	70 12 13	2368	68 27 52	2385
	Sun E.	118 19 27	2614	116 40 51	2632	115 2 39	2650	113 24 52	2668
16	α Aquilæ W.	69 18 40	2262	70 49 41	2268	72 20 34	2276	73 51 17	2284
	Fomalhaut W.	44 30 8	3427	45 50 35	3455	47 11 49	3419	48 33 44	3387
	Saturn E.	32 51 43	2532	31 11 14	2556	29 31 19	2589	27 51 59	2609
	Mars E.	39 14 54	2688	37 37 58	2707	36 1 28	2728	34 25 25	2747
	Jupiter E.	42 11 42	2510	40 30 42	2528	38 50 8	2547	37 10 0	2566
	Aldebaran E.	59 52 32	2477	58 10 46	2495	56 29 26	2514	54 48 32	2533
	Venus E.	60 21 24	2775	58 46 24	2795	57 11 49	2814	55 37 39	2833
	Sun E.	105 22 6	2761	103 46 47	2779	102 11 52	2798	100 37 21	2816
17	α Aquilæ W.	81 21 54	2039	82 51 19	2051	84 20 29	2065	85 49 22	2078
	Fomalhaut W.	55 30 40	3391	56 55 2	3280	58 19 37	3272	59 44 21	3266
	α Pegasi W.	33 35 36	3032	35 5 9	3013	36 35 6	2997	38 5 23	2985
	Mars E.	26 31 50	2652	24 58 30	2675	23 25 39	2688	21 53 18	2694
	Jupiter E.	28 55 50	2662	27 18 19	2682	25 41 15	2709	24 4 38	2724
	Aldebaran E.	46 30 32	2627	44 52 14	2646	43 14 22	2666	41 36 56	2686
	Venus E.	47 52 54	2927	46 21 9	2945	44 49 47	2963	43 18 48	2981
	Sun E.	92 50 40	2906	91 18 29	2924	89 46 40	2941	88 15 13	2958
18	α Aquilæ W.	93 9 23	3154	94 36 27	3170	96 3 12	3187	97 29 37	3204

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Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
18	Fomalhaut W.	61° 9' 12"	3992	62° 34' 8"	3959	63° 59' 8"	3957	65° 24' 10"	3957
	α Pegasi W.	39 35 54	2977	41 6 36	2970	42 37 26	2966	44 8 21	2965
	Aldebaran E.	39 59 57	2706	38 23 25	2725	36 47 19	2746	35 11 40	2767
	Venus E.	41 48 11	2999	40 17 57	3017	38 48 5	3034	37 18 35	3052
	Sun E.	86 41 7	2974	85 13 22	2991	83 42 58	3006	82 12 55	3024
19	Fomalhaut W.	72 29 0	3270	73 53 47	3275	75 18 28	3280	76 43 3	3287
	α Pegasi W.	51 42 59	2973	53 13 46	2977	54 44 27	2982	56 15 2	2987
	Venus E.	20 56 31	3140	28 29 10	3158	27 2 11	3176	25 35 33	3194
	Sun E.	74 47 30	3101	73 19 21	3114	71 51 29	3129	70 23 54	3143
20	Fomalhaut W.	83 43 58	3324	85 7 42	3332	86 31 17	3340	87 54 42	3350
	α Pegasi W.	63 46 12	3018	65 16 3	3025	66 45 45	3031	68 15 19	3038
	α Arietis W.	20 11 0	3080	21 39 34	3061	23 8 31	3048	24 37 44	3039
	Sun E.	63 10 2	3208	61 44 2	3220	60 18 16	3231	58 52 43	3242
21	Fomalhaut W.	94 48 59	3400	96 11 15	3411	97 33 19	3423	98 55 10	3434
	α Pegasi W.	75 41 5	3071	77 9 50	3078	78 38 26	3085	80 6 54	3091
	α Arietis W.	32 5 42	3025	33 35 24	3026	35 5 5	3027	36 34 44	3029
	Saturn W.	25 46 15	3048	27 15 28	3047	28 44 43	3047	30 13 58	3047
	Sun E.	51 48 12	3294	50 23 54	3305	48 59 48	3314	47 35 53	3323
22	α Arietis W.	44 2 15	3043	45 31 34	3047	47 0 49	3051	48 29 59	3053
	Saturn W.	37 39 48	3058	39 8 49	3060	40 37 47	3064	42 6 41	3067
	Mars W.	27 27 8	3276	28 51 48	3279	30 16 24	3282	31 40 56	3285
	Jupiter W.	27 20 56	3075	28 49 36	3078	30 18 13	3081	31 46 46	3084
	Sun E.	40 38 50	3365	39 15 54	3374	37 53 8	3382	36 30 31	3389
23	α Arietis W.	55 54 54	3089	57 23 41	3072	58 52 25	3074	60 21 6	3077
	Saturn W.	49 30 17	3081	50 58 50	3084	52 27 19	3087	53 55 45	3090
	Jupiter W.	39 8 28	3101	40 36 36	3104	42 4 41	3107	43 32 42	3110
	Mars W.	38 42 40	3302	40 6 49	3306	41 30 54	3308	42 54 56	3311
	Sun E.	29 39 36	3429	28 17 52	3437	26 56 17	3446	25 34 52	3454
27	Sun W.	14 36 39	3567	15 55 49	3544	17 15 25	3525	18 35 21	3510
	Spica E.	63 40 26	3070	62 11 40	3069	60 42 52	3067	59 14 2	3065
	Antares E.	109 10 3	3078	107 41 26	3075	106 12 46	3073	104 44 3	3070
28	Sun W.	25 18 32	3459	26 39 42	3451	28 1 1	3443	29 22 29	3436
	Spica E.	51 49 10	3052	50 20 1	3048	48 50 48	3045	47 21 31	3042
	Antares E.	97 19 41	3056	95 50 38	3052	94 21 30	3049	92 52 18	3045
29	Sun W.	36 11 51	3400	37 34 8	3393	38 56 33	3385	40 19 7	3378
	Spica E.	39 53 54	3021	38 24 7	3015	36 54 13	3010	35 24 13	3005
	Antares E.	85 24 59	3022	83 55 13	3017	82 25 21	3011	80 55 22	3005
30	Sun W.	47 14 9	3337	48 37 38	3328	50 1 17	3319	51 25 7	3309
	Spica E.	27 52 30	2977	26 21 48	2970	24 50 58	2965	23 20 1	2962
	Antares E.	73 23 33	2973	71 52 46	2965	70 21 49	2958	68 50 43	2949
31	Sun W.	58 27 9	3258	59 52 10	3247	61 17 24	3235	62 42 52	3222
	Antares E.	61 12 32	2905	59 40 20	2895	58 7 55	2885	56 35 17	2875
	α Aquilæ E.	112 44 36	3431	111 22 55	3409	110 0 49	3388	108 38 19	3368

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
18	Fomalhaut	W.	66° 49' 12"	3258	68° 14' 13"	3259	69° 39' 12"	3262	71° 4' 8"	3265
	α Pegasi	W.	45 39 18	2964	47 10 16	2965	48 41 13	2966	50 12 8	2969
	Aldebaran	E.	33 36 29	2789	32 1 47	2812	30 27 35	2836	28 53 54	2862
	Venus	E.	35 49 27	3070	34 20 41	3087	32 52 16	3105	31 24 13	3123
	Sun	E.	80 43 12	3030	79 13 48	3055	77 44 43	3070	76 15 57	3086
19	Fomalhaut	W.	78 7 30	3293	79 31 50	3300	80 56 1	3307	82 20 4	3315
	α Pegasi	W.	57 45 31	2993	59 15 53	2999	60 46 7	3005	62 16 13	3011
	Venus	E.	24 9 17	2913	22 43 23	2933	21 17 53	2953	19 52 47	2976
	Sun	E.	68 56 36	3156	67 29 34	3169	66 2 48	3182	64 36 17	3195
20	Fomalhaut	W.	89 17 56	3359	90 40 59	3369	92 3 51	3379	93 26 31	3390
	α Pegasi	W.	69 44 45	3045	71 14 2	3059	72 43 11	3058	74 12 12	3065
	α Arietis	W.	26 7 8	3032	27 36 41	3028	29 6 19	3026	30 36 0	3025
	Sun	E.	57 27 23	3253	56 2 16	3264	54 37 22	3275	53 12 41	3285
21	Fomalhaut	W.	100 16 48	3446	101 38 12	3459	102 59 22	3479	104 20 17	3485
	α Pegasi	W.	81 35 14	3098	83 3 26	3104	84 31 31	3110	85 59 28	3116
	α Arietis	W.	38 4 21	3031	39 33 55	3034	41 3 25	3037	42 32 52	3040
	Saturn	W.	31 43 12	3048	33 12 25	3050	34 41 36	3052	36 10 44	3056
	Sun	E.	46 12 8	3332	44 48 33	3341	43 25 9	3350	42 1 55	3358
22	α Arietis	W.	49 59 6	3056	51 28 9	3060	52 57 8	3063	54 26 3	3066
	Saturn	W.	43 35 31	3069	45 4 18	3073	46 33 1	3075	48 1 41	3078
	Mars	W.	33 5 25	3289	34 29 49	3299	35 54 10	3295	37 18 27	3299
	Jupiter	W.	33 15 15	3087	34 43 40	3091	36 12 0	3095	37 40 16	3098
	Sun	E.	35 8 2	3397	33 45 42	3405	32 23 31	3413	31 1 29	3421
23	α Arietis	W.	61 49 44	3079	63 18 19	3089	64 46 50	3085	66 15 18	3087
	Saturn	W.	55 24 7	3092	56 52 26	3094	58 20 43	3096	59 48 57	3098
	Jupiter	W.	45 0 40	3113	46 28 34	3115	47 56 25	3118	49 24 13	3119
	Mars	W.	44 18 55	3314	45 42 50	3317	47 6 42	3319	48 30 32	3320
	Sun	E.	24 13 36	3463	22 52 31	3474	21 31 38	3486	20 10 58	3499
27	Sun	W.	19 55 34	3497	21 16 2	3486	22 36 42	3477	23 57 32	3468
	Spica	E.	57 45 10	3063	56 16 15	3080	54 47 17	3057	53 18 15	3055
	Antares	E.	103 15 17	3068	101 46 28	3065	100 17 36	3062	98 48 40	3060
28	Sun	W.	30 44 5	3498	32 5 50	3421	33 27 43	3415	34 49 43	3408
	Spica	E.	45 52 10	3038	44 22 44	3034	42 53 13	3029	41 23 36	3025
	Antares	E.	91 23 1	3041	89 53 39	3036	88 24 11	3032	86 54 38	3027
29	Sun	W.	41 41 49	3370	43 4 40	3362	44 27 40	3353	45 50 50	3345
	Spica	E.	33 54 6	2999	32 23 52	2994	30 53 32	2989	29 23 5	2982
	Antares	E.	79 25 16	2999	77 55 2	2993	76 24 41	2986	74 54 11	2980
30	Sun	W.	52 49 8	3300	54 13 20	3289	55 37 44	3279	57 2 20	3268
	Spica	E.	21 48 56	2953	20 17 44	2948	18 46 26	2943	17 15 2	2940
	Antares	E.	67 19 26	2941	65 47 59	2932	64 16 21	2924	62 44 32	2915
31	Sun	W.	64 8 35	3210	65 34 32	3198	67 0 43	3185	68 27 10	3173
	Antares	E.	55 2 26	2865	53 29 22	2854	51 56 4	2843	50 22 32	2831
	α Aquile	E.	107 15 26	3349	105 52 11	3330	104 28 34	3312	103 4 36	3293

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to		Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.	subtracted from Apparent Time.				
Mon.	1	^h 8 ^m 47 ^s 1.03	9.703	N. 17° 56' 4.2"	-38.05	15' 48".08	66.61	^m 6 ^s 4.46		0.153	
Tues.	2	8 50 53.55	9.677	17 40 42.2	38.78	15 48.22	66.53	6 0.45		0.179	
Wed.	3	8 54 45.46	9.651	17 25 3.1	39.49	15 48.36	66.44	5 55.82		0.205	
Thur.	4	8 58 36.75	9.626	17 9 7.0	40.18	15 48.50	66.35	5 50.57		0.230	
Frid.	5	9 2 27.42	9.599	16 52 54.4	40.86	15 48.65	66.26	5 44.70		0.256	
Sat.	6	9 6 17.48	9.574	16 36 25.5	41.54	15 48.80	66.18	5 38.21		0.282	
Sun.	7	9 10 6.94	9.548	16 19 40.5	42.20	15 48.95	66.10	5 31.13		0.307	
Mon.	8	9 13 55.80	9.523	16 2 39.8	42.86	15 49.11	66.02	5 23.45		0.332	
Tues.	9	9 17 44.05	9.499	15 45 23.5	43.49	15 49.27	65.93	5 15.18		0.356	
Wed.	10	9 21 31.74	9.474	15 27 52.1	44.12	15 49.43	65.85	5 6.34		0.381	
Thur.	11	9 25 18.86	9.452	15 10 5.8	44.74	15 49.58	65.77	4 56.93		0.403	
Frid.	12	9 29 5.41	9.429	14 52 4.9	45.34	15 49.75	65.69	4 46.96		0.426	
Sat.	13	9 32 51.42	9.407	14 33 49.6	45.94	15 49.92	65.61	4 36.44		0.449	
Sun.	14	9 36 36.91	9.384	14 15 20.4	46.51	15 50.10	65.53	4 25.40		0.471	
Mon.	15	9 40 21.87	9.363	13 56 37.4	47.07	15 50.27	65.45	4 13.84		0.492	
Tues.	16	9 44 6.32	9.342	13 37 41.0	47.62	15 50.45	65.37	4 1.77		0.513	
Wed.	17	9 47 50.27	9.321	13 18 31.7	48.16	15 50.63	65.30	3 49.20		0.534	
Thur.	18	9 51 33.73	9.301	12 59 9.7	48.68	15 50.82	65.23	3 36.14		0.554	
Frid.	19	9 55 16.72	9.181	12 39 35.0	49.19	15 51.00	65.16	3 22.60		0.574	
Sat.	20	9 58 59.23	9.262	12 19 48.2	49.69	15 51.19	65.09	3 8.60		0.593	
Sun.	21	10 2 41.28	9.243	11 59 49.7	50.18	15 51.38	65.02	2 54.14		0.612	
Mon.	22	10 6 22.89	9.224	11 39 39.7	50.65	15 51.58	64.96	2 39.23		0.630	
Tues.	23	10 10 4.06	9.206	11 19 18.5	51.10	15 51.77	64.89	2 23.88		0.648	
Wed.	24	10 13 44.81	9.189	10 58 46.6	51.54	15 51.99	64.83	2 8.11		0.665	
Thur.	25	10 17 25.15	9.171	10 38 4.2	51.97	15 52.19	64.77	1 51.95		0.683	
Frid.	26	10 21 5.09	9.155	10 17 11.8	52.38	15 52.41	64.71	1 35.38		0.699	
Sat.	27	10 24 44.63	9.139	9 56 9.5	52.78	15 52.63	64.65	1 18.41		0.715	
Sun.	28	10 28 23.78	9.123	9 34 58.0	53.16	15 52.86	64.59	1 1.06		0.731	
Mon.	29	10 32 2.57	9.108	9 13 37.2	53.53	15 53.09	64.54	0 43.35		0.746	
Tues.	30	10 35 41.00	9.094	8 52 7.8	53.90	15 53.32	64.49	0 25.28		0.760	
Wed.	31	10 39 19.09	9.080	8 30 29.9	54.25	15 53.55	64.44	0 6.86		0.774	
Thur.	32	10 42 56.86	9.067	N. 8 8 44.0	-54.58	15 53.79	64.40	0 11.88		0.787	

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0°.18 from the Sidereal Time.

— prefixed to the hourly change of declination indicates that the north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be subtracted from		Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	added to Mean Time.	Diff. for 1 hour.	
Mon.	1	^h 8 ^m 0.05	^s 9.703	N. 17° 56' 8".1	-38.05	^m 6 ^s 4.48	^s 0.153	^h 8 ^m 40 ^s 55.57
Tues.	2	8 50 52.59	9.677	17 40 46.1	38.78	6 0.47	0.179	8 44 52.12
Wed.	3	8 54 44.51	9.651	17 25 7.0	39.49	5 55.84	0.205	8 48 48.68
Thur.	4	8 58 35.82	9.626	17 9 10.9	40.18	5 50.59	0.230	8 52 45.23
Frid.	5	9 2 26.51	9.599	16 52 58.3	40.86	5 44.72	0.256	8 56 41.79
Sat.	6	9 6 16.59	9.574	16 36 29.4	41.54	5 38.24	0.282	9 0 38.35
Sun.	7	9 10 6.07	9.549	16 19 44.4	42.20	5 31.16	0.307	9 4 34.91
Mon.	8	9 13 54.95	9.524	16 2 43.6	42.86	5 23.48	0.332	9 8 31.46
Tues.	9	9 17 43.23	9.500	15 45 27.3	43.49	5 15.21	0.356	9 12 28.02
Wed.	10	9 21 30.94	9.475	15 27 55.8	44.12	5 6.37	0.381	9 16 24.57
Thur.	11	9 25 18.08	9.453	15 10 9.5	44.74	4 56.96	0.403	9 20 21.12
Frid.	12	9 29 4.66	9.430	14 52 8.5	45.34	4 46.99	0.426	9 24 17.67
Sat.	13	9 32 50.70	9.408	14 33 53.1	45.94	4 36.47	0.449	9 28 14.23
Sun.	14	9 36 36.22	9.385	14 15 23.8	46.51	4 25.43	0.471	9 32 10.78
Mon.	15	9 40 21.21	9.364	13 56 40.7	47.07	4 13.87	0.492	9 36 7.34
Tues.	16	9 44 5.69	9.343	13 37 44.2	47.62	4 1.80	0.513	9 40 3.89
Wed.	17	9 47 49.67	9.322	13 18 34.8	48.17	3 49.23	0.534	9 44 0.45
Thur.	18	9 51 33.17	9.302	12 59 12.6	48.69	3 36.17	0.554	9 47 57.00
Frid.	19	9 55 16.19	9.282	12 39 37.8	49.20	3 22.63	0.574	9 51 53.56
Sat.	20	9 58 58.74	9.263	12 19 50.8	49.70	3 8.63	0.593	9 55 50.11
Sun.	21	10 2 40.83	9.244	11 59 52.1	50.19	2 54.17	0.612	9 59 46.67
Mon.	22	10 6 22.48	9.226	11 39 41.9	50.66	2 39.26	0.630	10 3 43.22
Tues.	23	10 10 3.69	9.208	11 19 20.5	51.11	2 23.91	0.648	10 7 39.78
Wed.	24	10 13 44.48	9.191	10 58 48.4	51.55	2 8.14	0.665	10 11 36.33
Thur.	25	10 17 24.86	9.173	10 38 5.8	51.98	1 51.97	0.683	10 15 32.89
Frid.	26	10 21 4.84	9.157	10 17 13.1	52.39	1 35.40	0.699	10 19 29.44
Sat.	27	10 24 44.42	9.141	9 56 10.6	52.79	1 18.43	0.715	10 23 25.99
Sun.	28	10 28 23.62	9.125	9 34 58.8	53.17	1 1.08	0.731	10 27 22.54
Mon.	29	10 32 2.45	9.110	9 13 37.8	53.54	0 43.36	0.746	10 31 19.10
Tues.	30	10 35 40.93	9.096	8 52 8.1	53.91	0 25.28	0.760	10 35 15.65
Wed.	31	10 39 19.07	9.082	8 30 30.0	54.26	0 6.86	0.774	10 39 12.21
Thur.	32	10 42 56.89	9.069	N. 8 8 43.8	-54.59	0 11.88	0.787	10 43 8.75

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

— prefixed to the hourly change of declination indicates that the north declinations are decreasing.

Diff. for 1 hour,
+ 9°.8565.
(Table III.)

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal ϕ^h .	
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ'						
1	213	129° 18' 58.4	18' 11.0	143.60	−0.76	0.0063283	−25.6	15 ^h 16 ^m 33.86 ^s	
2	214	130 16 25.0	15 37.5	143.63	0.66	.0062659	26.4	15 12 37.95	
3	215	131 13 52.4	13 4.8	143.66	0.53	.0062017	27.1	15 8 42.04	
4	216	132 11 20.5	10 32.7	143.69	0.40	.0061359	27.8	15 4 46.13	
5	217	133 8 49.3	8 1.3	143.72	0.26	.0060685	28.4	15 0 50.22	
6	218	134 6 18.9	5 30.8	143.75	−0.13	.0059997	28.9	14 56 54.31	
7	219	135 3 49.4	3 1.2	143.79	+0.01	.0059295	29.4	14 52 58.40	
8	220	136 1 20.8	0 32.5	143.83	0.12	.0058581	29.9	14 49 2.49	
9	221	136 58 53.3	58 4.8	143.87	0.21	.0057856	30.4	14 45 6.58	
10	222	137 56 26.9	55 38.2	143.92	0.27	.0057120	30.9	14 41 10.67	
11	223	138 54 1.7	53 12.9	143.97	0.31	.0056374	31.3	14 37 14.77	
12	224	139 51 37.8	50 48.9	144.03	0.31	.0055617	31.8	14 33 18.86	
13	225	140 49 15.3	48 26.3	144.09	0.27	.0054848	32.2	14 29 22.95	
14	226	141 46 54.3	46 5.1	144.15	0.22	.0054068	32.7	14 25 27.04	
15	227	142 44 34.8	43 45.5	144.21	0.13	.0053277	33.2	14 21 31.14	
16	228	143 42 16.8	41 27.4	144.28	+0.03	.0052473	33.8	14 17 35.23	
17	229	144 40 0.4	39 10.9	144.35	−0.09	.0051654	34.4	14 13 39.32	
18	230	145 37 45.6	36 56.0	144.42	0.22	.0050819	35.1	14 9 43.41	
19	231	146 35 32.5	34 42.7	144.49	0.34	.0049966	35.8	14 5 47.50	
20	232	147 33 21.1	32 31.2	144.56	0.47	.0049097	36.6	14 1 51.59	
21	233	148 31 11.4	30 21.4	144.63	0.58	.0048210	37.3	13 57 55.68	
22	234	149 29 3.3	28 13.2	144.69	0.68	.0047305	38.1	13 53 59.77	
23	235	150 26 56.7	26 6.5	144.76	0.74	.0046380	38.9	13 50 3.87	
24	236	151 24 51.7	24 1.4	144.83	0.78	.0045435	39.7	13 46 7.96	
25	237	152 22 48.3	21 57.9	144.90	0.78	.0044470	40.5	13 42 12.05	
26	238	153 20 46.5	19 56.0	144.96	0.77	.0043486	41.3	13 38 16.14	
27	239	154 18 46.2	17 55.6	145.02	0.72	.0042484	42.1	13 34 20.24	
28	240	155 16 47.3	15 56.6	145.07	0.64	.0041464	42.8	13 30 24.33	
29	241	156 14 49.8	13 59.0	145.13	0.54	.0040427	43.5	13 26 28.42	
30	242	157 12 53.8	12 2.9	145.19	0.42	.0039375	44.1	13 22 32.51	
31	243	158 10 59.2	10 8.2	145.25	0.28	.0038309	44.6	13 18 36.62	
32	244	159 9 5.9	8 14.8	145.31	−0.15	0.0037231	−45.1	13 14 40.71	
NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 04.0.								Diff. for 1 hour, − 9 ^s .8296. (Table II.)	

GREENWICH MEAN TIME.									
Day of the Month.	THE MOON'S								
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
1	15 15.0	15 20.7	55 51.5	+1.67	56 12.4	+1.81	^h 4 ^m 31.5	^m 1.93	^d 6.3
2	15 26.9	15 33.5	56 35.0	1.95	56 59.2	2.07	5 19.3	2.07	7.3
3	15 40.4	15 47.6	57 24.6	2.17	57 51.2	2.24	6 10.9	2.24	8.3
4	15 55.0	16 2.5	58 18.4	2.28	58 45.8	2.27	7 6.5	2.40	9.3
5	16 9.9	16 17.0	59 12.9	2.29	59 39.1	2.12	8 5.6	2.52	10.3
6	16 23.7	16 29.8	60 3.8	1.96	60 26.2	1.74	9 6.9	2.57	11.3
7	16 35.4	16 39.4	60 45.6	1.47	61 1.4	1.15	10 8.5	2.55	12.3
8	16 42.6	16 44.5	61 13.2	+0.78	61 20.2	+0.38	11 8.7	2.46	13.3
9	16 45.2	16 44.4	61 22.5	-0.03	61 19.6	-0.44	12 6.5	2.35	14.3
10	16 42.3	16 38.9	61 12.0	0.84	60 59.5	1.22	13 1.7	2.25	15.3
11	16 34.4	16 28.8	60 42.9	1.55	60 22.4	1.84	13 54.7	2.17	16.3
12	16 22.4	16 15.3	59 58.8	2.07	59 32.9	2.24	14 46.3	2.13	17.3
13	16 7.8	16 0.0	59 5.2	2.35	58 36.5	2.41	15 37.3	2.11	18.3
14	15 52.1	15 44.2	58 7.5	2.40	57 38.8	2.35	16 28.1	2.12	19.3
15	15 36.6	15 29.4	57 10.9	2.27	56 44.2	2.15	17 19.2	2.13	20.3
16	15 22.5	15 16.2	56 19.1	2.01	55 55.8	1.85	18 10.4	2.13	21.3
17	15 10.4	15 5.2	55 34.5	1.68	55 15.3	1.51	19 1.4	2.11	22.3
18	15 0.5	14 56.5	54 58.3	1.32	54 43.5	1.14	19 51.6	2.06	23.3
19	14 53.1	14 50.3	54 30.9	0.96	54 20.5	0.78	20 40.5	2.00	24.3
20	14 48.0	14 46.3	54 12.2	0.60	54 5.9	0.44	21 27.8	1.93	25.3
21	14 45.1	14 44.4	54 1.6	-0.28	53 59.1	-0.14	22 13.2	1.86	26.3
22	14 44.2	14 44.4	53 58.3	0.00	53 59.1	+0.13	22 57.0	1.79	27.3
23	14 45.1	14 46.0	54 1.4	+0.25	54 5.0	0.36	23 39.6	1.75	28.3
24	14 47.4	14 49.1	54 10.0	0.47	54 16.2	0.57	♄		29.3
25	14 51.1	14 53.4	54 23.5	0.66	54 32.0	0.76	0 21.5	1.74	0.6
26	14 56.0	14 58.9	54 41.7	0.85	54 52.4	0.94	1 3.4	1.76	1.6
27	15 2.2	15 5.7	55 4.3	1.04	55 17.4	1.14	1 46.1	1.81	2.6
28	15 9.6	15 13.9	55 31.7	1.24	55 47.2	1.34	2 30.3	1.89	3.6
29	15 18.4	15 23.2	56 3.8	1.43	56 21.6	1.53	3 16.9	2.00	4.6
30	15 28.4	15 33.8	56 40.6	1.63	57 0.6	1.72	4 6.4	2.14	5.6
31	15 39.6	15 45.5	57 21.7	1.79	57 48.5	1.85	4 59.3	2.27	6.6
32	15 51.6	15 57.8	58 5.9	+1.88	58 28.7	+1.89	5 55.3	2.39	7.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 1.					WEDNESDAY 3.				
0	13 3 59.74	2.0111	S. 11° 29' 39.3"	10.659	0	14 46 32.88	2.9770	S. 18° 54' 3.6"	7.441
1	13 6 0.54	2.0156	11 40 17.2	10.610	1	14 48 49.69	2.9633	19 1 27.2	7.346
2	13 8 1.61	2.0201	11 50 52.5	10.566	2	14 51 6.88	2.9506	19 8 45.1	7.250
3	13 10 2.95	2.0246	12 1 25.1	10.523	3	14 53 24.44	2.9359	19 15 57.2	7.153
4	13 12 4.56	2.0292	12 11 55.1	10.477	4	14 55 42.38	2.9099	19 23 3.5	7.054
5	13 14 6.45	2.0339	12 22 22.4	10.433	5	14 58 0.70	2.9084	19 30 3.7	6.953
6	13 16 8.63	2.0387	12 32 46.9	10.385	6	15 0 19.39	2.9147	19 36 57.8	6.851
7	13 18 11.10	2.0436	12 43 8.6	10.337	7	15 2 38.46	2.9210	19 43 45.8	6.749
8	13 20 13.86	2.0484	12 53 27.3	10.287	8	15 4 57.91	2.9273	19 50 27.7	6.646
9	13 22 16.91	2.0532	13 3 43.0	10.237	9	15 7 17.74	2.9337	19 57 3.3	6.541
10	13 24 20.25	2.0580	13 13 55.7	10.187	10	15 9 37.95	2.9399	20 3 32.6	6.434
11	13 26 23.89	2.0632	13 24 5.4	10.135	11	15 11 58.53	2.9462	20 9 55.4	6.326
12	13 28 27.84	2.0683	13 34 11.9	10.082	12	15 14 19.49	2.9524	20 16 11.7	6.217
13	13 30 32.09	2.0734	13 44 15.2	10.027	13	15 16 40.82	2.9587	20 22 21.5	6.107
14	13 32 36.65	2.0786	13 54 15.2	9.972	14	15 19 2.53	2.9649	20 28 24.6	5.996
15	13 34 41.52	2.0838	14 4 11.9	9.917	15	15 21 24.61	2.9711	20 34 21.0	5.883
16	13 36 46.70	2.0890	14 14 5.2	9.860	16	15 23 47.06	2.9773	20 40 10.6	5.770
17	13 38 52.20	2.0942	14 23 55.1	9.802	17	15 26 9.88	2.9834	20 45 53.4	5.655
18	13 40 58.01	2.0996	14 33 41.4	9.742	18	15 28 33.07	2.9896	20 51 29.2	5.538
19	13 43 4.15	2.1050	14 43 24.1	9.682	19	15 30 56.63	2.9957	20 56 58.0	5.421
20	13 45 10.61	2.1104	14 53 3.2	9.621	20	15 33 20.55	2.4017	21 2 19.7	5.302
21	13 47 17.40	2.1159	15 2 38.6	9.558	21	15 35 44.83	2.4078	21 7 34.3	5.183
22	13 49 24.52	2.1215	15 12 10.2	9.494	22	15 38 9.48	2.4138	21 12 41.7	5.062
23	13 51 31.98	2.1271	S. 15° 21' 37.9"	9.430	23	15 40 34.49	2.4197	S. 21° 17' 41.8"	4.939
TUESDAY 2.					THURSDAY 4.				
0	13 53 39.77	2.1327	S. 15° 31' 1.8"	9.365	0	15 42 59.85	2.4257	S. 21° 22' 34.4"	4.815
1	13 55 47.90	2.1383	15 40 21.7	9.297	1	15 45 25.57	2.4316	21 27 19.6	4.691
2	13 57 56.37	2.1440	15 49 37.5	9.229	2	15 47 51.64	2.4374	21 31 57.3	4.565
3	14 0 5.18	2.1497	15 58 49.2	9.160	3	15 50 18.06	2.4433	21 36 27.4	4.438
4	14 2 14.34	2.1555	16 7 56.7	9.090	4	15 52 44.83	2.4491	21 40 49.9	4.310
5	14 4 23.84	2.1613	16 17 0.0	9.019	5	15 55 11.95	2.4548	21 45 4.6	4.180
6	14 6 33.69	2.1672	16 25 59.0	8.947	6	15 57 39.41	2.4605	21 49 11.5	4.050
7	14 8 43.90	2.1731	16 34 53.6	8.873	7	16 0 7.21	2.4661	21 53 10.6	3.918
8	14 10 54.46	2.1789	16 43 43.8	8.798	8	16 2 35.34	2.4718	21 57 1.7	3.785
9	14 13 5.37	2.1848	16 52 29.4	8.722	9	16 5 3.80	2.4771	22 0 44.8	3.651
10	14 15 16.64	2.1909	17 1 10.4	8.645	10	16 7 32.59	2.4825	22 4 19.8	3.516
11	14 17 28.28	2.1969	17 9 46.8	8.567	11	16 10 1.70	2.4878	22 7 46.7	3.380
12	14 19 40.27	2.2028	17 18 18.5	8.488	12	16 12 31.13	2.4932	22 11 5.4	3.243
13	14 21 52.62	2.2089	17 26 45.4	8.407	13	16 15 0.88	2.4984	22 14 15.9	3.105
14	14 24 5.34	2.2151	17 35 7.4	8.325	14	16 17 30.94	2.5036	22 17 18.0	2.965
15	14 26 18.43	2.2212	17 43 24.4	8.242	15	16 20 1.31	2.5087	22 20 11.7	2.824
16	14 28 31.89	2.2273	17 51 36.4	8.158	16	16 22 31.98	2.5137	22 22 56.9	2.683
17	14 30 45.71	2.2334	17 59 43.4	8.073	17	16 25 2.95	2.5187	22 25 33.7	2.541
18	14 32 59.90	2.2396	18 7 45.2	7.986	18	16 27 34.22	2.5236	22 28 1.9	2.398
19	14 35 14.46	2.2458	18 15 41.7	7.898	19	16 30 5.78	2.5283	22 30 21.5	2.254
20	14 37 29.40	2.2521	18 23 33.0	7.810	20	16 32 37.62	2.5330	22 32 32.4	2.108
21	14 39 44.71	2.2583	18 31 18.9	7.720	21	16 35 9.74	2.5376	22 34 34.5	1.961
22	14 42 0.39	2.2645	18 38 59.4	7.628	22	16 37 42.13	2.5421	22 36 27.8	1.814
23	14 44 16.45	2.2707	18 46 34.3	7.535	23	16 40 14.79	2.5466	22 38 12.2	1.667
24	14 46 32.88	2.2770	S. 18° 54' 3.6"	7.441	24	16 42 47.72	2.5510	S. 22° 39' 47.8"	1.518

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 5.					SUNDAY 7.				
0	16 42 47.72	2.5510	S. 22° 39' 47.8	1.518	0	18 48 10.10	2.6975	S. 20° 51' 16.6	6.093
1	16 45 20.91	2.5552	22 41 14.4	1.368	1	18 50 47.71	2.6993	20 45 6.4	6.943
2	16 47 54.35	2.5593	22 42 32.0	1.917	2	18 53 25.24	2.6947	20 38 46.9	6.409
3	16 50 28.03	2.5633	22 43 40.5	1.066	3	18 56 2.67	2.6921	20 32 18.2	6.555
4	16 53 1.95	2.5673	22 44 39.9	0.914	4	18 58 40.01	2.6916	20 25 40.3	6.706
5	16 55 36.11	2.5713	22 45 30.2	0.763	5	19 1 17.26	2.6199	20 18 53.2	6.861
6	16 58 10.50	2.5750	22 46 11.4	0.609	6	19 3 54.40	2.6181	20 11 57.0	7.012
7	17 0 45.11	2.5786	22 46 43.3	0.454	7	19 6 31.43	2.6163	20 4 51.8	7.161
8	17 3 19.93	2.5821	22 47 5.9	0.299	8	19 9 8.34	2.6141	19 57 37.7	7.310
9	17 5 54.96	2.5856	22 47 19.2	-0.144	9	19 11 45.12	2.6119	19 50 14.6	7.459
10	17 8 30.20	2.5890	22 47 23.2	+0.012	10	19 14 21.77	2.6097	19 42 42.6	7.606
11	17 11 5.64	2.5922	22 47 17.8	0.169	11	19 16 58.29	2.6075	19 35 1.9	7.751
12	17 13 41.27	2.5953	22 47 2.9	0.327	12	19 19 34.67	2.6051	19 27 12.5	7.896
13	17 16 17.08	2.5983	22 46 38.6	0.484	13	19 22 10.90	2.6026	19 19 14.4	8.041
14	17 18 53.06	2.6012	22 46 4.8	0.642	14	19 24 46.98	2.6001	19 11 7.6	8.184
15	17 21 29.22	2.6040	22 45 21.5	0.801	15	19 27 22.91	2.5975	19 2 52.3	8.326
16	17 24 5.54	2.6066	22 44 28.6	0.961	16	19 29 58.68	2.5947	18 54 28.6	8.466
17	17 26 42.01	2.6091	22 43 26.2	1.120	17	19 32 34.28	2.5918	18 45 56.4	8.606
18	17 29 18.63	2.6115	22 42 14.2	1.280	18	19 35 9.70	2.5889	18 37 15.9	8.743
19	17 31 55.39	2.6138	22 40 52.6	1.441	19	19 37 44.95	2.5860	18 28 27.2	8.880
20	17 34 32.29	2.6160	22 39 21.3	1.602	20	19 40 20.02	2.5830	18 19 30.3	9.016
21	17 37 9.31	2.6180	22 37 40.4	1.763	21	19 42 54.91	2.5799	18 10 25.3	9.150
22	17 39 46.45	2.6200	22 35 49.8	1.924	22	19 45 29.61	2.5767	18 1 12.3	9.289
23	17 42 23.71	2.6218	S. 22° 33' 49.5	2.085	23	19 48 4.11	2.5734	S. 17° 51' 51.4	9.414
SATURDAY 6.					MONDAY 8.				
0	17 45 1.07	2.6235	S. 22° 31' 39.6	2.246	0	19 50 38.42	2.5701	S. 17° 42' 22.6	9.545
1	17 47 38.53	2.6251	22 29 20.0	2.408	1	19 53 12.53	2.5667	17 32 46.0	9.673
2	17 50 16.08	2.6265	22 26 50.6	2.571	2	19 55 46.43	2.5633	17 23 1.8	9.800
3	17 52 53.71	2.6278	22 24 11.5	2.733	3	19 58 20.13	2.5599	17 13 10.0	9.926
4	17 55 31.42	2.6290	22 21 22.7	2.895	4	20 0 53.62	2.5563	17 3 10.7	10.050
5	17 58 9.19	2.6300	22 18 24.1	3.057	5	20 3 26.89	2.5528	16 53 4.0	10.173
6	18 0 47.02	2.6310	22 15 15.8	3.219	6	20 5 59.95	2.5492	16 42 49.9	10.295
7	18 3 24.91	2.6319	22 11 57.8	3.381	7	20 8 32.79	2.5454	16 32 28.6	10.414
8	18 6 2.85	2.6327	22 8 30.1	3.543	8	20 11 5.40	2.5417	16 22 0.2	10.539
9	18 8 40.83	2.6333	22 4 52.6	3.705	9	20 13 37.79	2.5379	16 11 24.8	10.648
10	18 11 18.84	2.6337	22 1 5.5	3.868	10	20 16 9.95	2.5341	16 0 42.4	10.764
11	18 13 56.87	2.6339	21 57 8.7	4.037	11	20 18 41.88	2.5303	15 49 53.1	10.877
12	18 16 34.91	2.6341	21 53 2.2	4.198	12	20 21 13.59	2.5265	15 38 57.1	10.988
13	18 19 12.96	2.6342	21 48 46.1	4.349	13	20 23 45.06	2.5225	15 27 54.5	11.098
14	18 21 51.02	2.6342	21 44 20.3	4.511	14	20 26 16.29	2.5185	15 16 45.3	11.207
15	18 24 29.07	2.6340	21 39 44.8	4.673	15	20 28 47.28	2.5145	15 5 29.6	11.314
16	18 27 7.10	2.6337	21 34 59.7	4.831	16	20 31 18.03	2.5105	14 54 7.6	11.418
17	18 29 45.12	2.6334	21 30 5.1	4.990	17	20 33 48.54	2.5064	14 42 39.4	11.520
18	18 32 23.11	2.6328	21 25 0.9	5.150	18	20 36 18.80	2.5023	14 31 5.0	11.623
19	18 35 1.06	2.6322	21 19 47.1	5.309	19	20 38 48.82	2.4983	14 19 24.6	11.729
20	18 37 38.98	2.6316	21 14 23.8	5.467	20	20 41 18.60	2.4942	14 7 38.3	11.831
21	18 40 16.85	2.6307	21 8 51.1	5.623	21	20 43 48.13	2.4901	13 55 46.1	11.918
22	18 42 54.66	2.6297	21 3 9.0	5.780	22	20 46 17.41	2.4860	13 43 48.2	12.012
23	18 45 32.41	2.6287	20 57 17.5	5.937	23	20 48 46.45	2.4818	13 31 44.7	12.103
24	18 48 10.10	2.6275	S. 20° 51' 16.6	6.093	24	20 51 15.23	2.4776	S. 13° 19' 35.8	12.193

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 9.					THURSDAY 11.				
0	^h 20 ^m 51 ^s 15.23	2.4776	S. 13° 19' 35.8"	12.193	0	^h 22 ^m 45 ^s 36.79	2.9980	S. 2° 25' 21.0"	14.352
1	20 53 43.76	2.4735	13 7 21.5	12.282	1	22 47 54.58	2.9981	2 10 59.8	14.352
2	20 56 12.05	2.4694	12 55 1.9	12.370	2	22 50 12.20	2.9982	1 56 38.7	14.351
3	20 58 40.09	2.4653	12 42 37.1	12.455	3	22 52 29.66	2.9986	1 42 17.7	14.348
4	21 1 7.88	2.4611	12 30 7.3	12.538	4	22 54 46.95	2.9988	1 27 56.9	14.343
5	21 3 35.42	2.4569	12 17 32.5	12.620	5	22 57 4.08	2.9942	1 13 36.5	14.337
6	21 6 2.70	2.4526	12 4 52.9	12.699	6	22 59 21.06	2.9817	0 59 16.5	14.329
7	21 8 29.73	2.4484	11 52 8.6	12.777	7	23 1 37.88	2.9791	0 44 57.0	14.320
8	21 10 56.51	2.4443	11 39 19.7	12.853	8	23 3 54.55	2.9765	0 30 38.1	14.308
9	21 13 23.04	2.4402	11 26 26.2	12.927	9	23 6 11.06	2.9740	0 16 20.0	14.295
10	21 15 49.33	2.4361	11 13 28.4	12.999	10	23 8 27.43	2.9716	S. 0° 2' 2.7"	14.282
11	21 18 15.37	2.4319	11 0 26.8	13.069	11	23 10 43.65	2.9692	N. 0 12 13.8	14.266
12	21 20 41.16	2.4277	10 47 20.1	13.137	12	23 12 59.73	2.9668	0 26 29.2	14.248
13	21 23 6.70	2.4236	10 34 9.8	13.204	13	23 15 15.67	2.9646	0 40 43.5	14.226
14	21 25 31.99	2.4195	10 20 55.6	13.268	14	23 17 31.48	2.9624	0 54 56.6	14.208
15	21 27 57.04	2.4155	10 7 37.6	13.331	15	23 19 47.16	2.9603	1 9 8.5	14.187
16	21 30 21.85	2.4114	9 54 15.9	13.392	16	23 22 2.71	2.9582	1 23 19.0	14.163
17	21 32 46.41	2.4073	9 40 50.6	13.451	17	23 24 18.14	2.9561	1 37 28.0	14.138
18	21 35 10.73	2.4033	9 27 21.8	13.507	18	23 26 33.44	2.9540	1 51 35.5	14.112
19	21 37 34.81	2.3993	9 13 49.7	13.562	19	23 28 48.62	2.9521	2 5 41.4	14.083
20	21 39 58.65	2.3953	9 0 14.3	13.616	20	23 31 3.69	2.9502	2 19 45.5	14.059
21	21 42 22.25	2.3914	8 46 35.8	13.667	21	23 33 18.64	2.9483	2 33 47.7	14.021
22	21 44 45.62	2.3875	8 32 54.3	13.716	22	23 35 33.48	2.9465	2 47 48.0	13.989
23	21 47 8.75	2.3836	S. 8° 19' 9.9"	13.764	23	23 37 48.22	2.9447	N. 3 1 46.4	13.956
WEDNESDAY 10.					FRIDAY 12.				
0	21 49 31.65	2.3797	S. 8° 5' 22.6"	13.810	0	23 40 2.85	2.9430	N. 3 15 42.7	13.921
1	21 51 54.32	2.3759	7 51 32.7	13.853	1	23 42 17.38	2.9413	3 29 36.9	13.884
2	21 54 16.76	2.3721	7 37 40.2	13.895	2	23 44 31.81	2.9397	3 43 28.8	13.845
3	21 56 38.97	2.3683	7 23 45.3	13.934	3	23 46 46.14	2.9381	3 57 18.3	13.805
4	21 59 0.95	2.3645	7 9 48.1	13.972	4	23 49 0.38	2.9366	4 11 5.4	13.765
5	22 1 22.71	2.3608	6 55 48.6	14.009	5	23 51 14.53	2.9351	4 24 50.1	13.723
6	22 3 44.25	2.3572	6 41 47.0	14.044	6	23 53 28.59	2.9337	4 38 32.2	13.680
7	22 6 5.57	2.3535	6 27 43.3	14.077	7	23 55 42.57	2.9323	4 52 11.7	13.635
8	22 8 26.67	2.3499	6 13 37.8	14.107	8	23 57 56.47	2.9310	5 5 48.4	13.589
9	22 10 47.56	2.3463	5 59 30.5	14.136	9	0 0 10.29	2.9297	5 19 22.3	13.542
10	22 13 8.23	2.3428	5 45 21.5	14.162	10	0 2 24.03	2.9284	5 32 53.4	13.493
11	22 15 28.70	2.3394	5 31 11.0	14.187	11	0 4 37.70	2.9272	5 46 21.5	13.442
12	22 17 48.96	2.3359	5 16 59.0	14.211	12	0 6 51.30	2.9261	5 59 46.5	13.391
13	22 20 9.01	2.3325	5 2 45.7	14.232	13	0 9 4.83	2.9250	6 13 8.4	13.339
14	22 22 28.86	2.3292	4 48 31.1	14.252	14	0 11 18.30	2.9239	6 26 27.2	13.286
15	22 24 48.51	2.3258	4 34 15.4	14.270	15	0 13 31.70	2.9229	6 39 42.7	13.231
16	22 27 7.96	2.3226	4 19 58.7	14.286	16	0 15 45.05	2.9220	6 52 54.9	13.175
17	22 29 27.22	2.3194	4 5 41.1	14.301	17	0 17 58.34	2.9210	7 6 3.7	13.118
18	22 31 46.29	2.3162	3 51 22.6	14.313	18	0 20 11.57	2.9201	7 19 9.1	13.060
19	22 34 5.17	2.3131	3 37 3.5	14.323	19	0 22 24.75	2.9193	7 32 10.9	13.000
20	22 36 23.86	2.3099	3 22 43.8	14.332	20	0 24 37.88	2.9185	7 45 9.1	12.940
21	22 38 42.36	2.3068	3 8 23.6	14.340	21	0 26 50.97	2.9177	7 58 3.7	12.878
22	22 41 0.68	2.3038	2 54 3.0	14.346	22	0 29 4.01	2.9170	8 10 54.5	12.815
23	22 43 18.82	2.3009	2 39 42.1	14.350	23	0 31 17.01	2.9163	8 23 41.5	12.752
24	22 45 36.79	2.2980	S. 2° 25' 21.0"	14.352	24	0 33 29.96	2.9156	N. 8 36 24.6	12.686

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 13.					MONDAY 15.				
0	h m s	^a	N. 8° 36' 24.6"	12.686	0	h m s	^a	N. 17° 12' 55.4"	8.538
1	0 33 29.96	2.2156	8 49 3.8	12.690	1	2 19 42.13	2.2176	17 21 24.6	8.435
2	0 35 42.88	2.2151	9 1 39.0	12.552	2	2 21 55.20	2.2180	17 21 24.6	8.435
3	0 37 55.77	2.2145	9 14 10.1	12.484	3	2 24 8.29	2.2184	17 29 47.6	8.339
4	0 40 8.62	2.2139	9 26 37.1	12.416	4	2 26 21.41	2.2188	17 38 4.4	8.228
5	0 42 21.44	2.2135	9 39 0.0	12.346	5	2 28 34.55	2.2192	17 46 14.9	8.123
6	0 44 34.24	2.2131	9 51 18.6	12.274	6	2 30 47.71	2.2195	17 54 19.2	8.018
7	0 46 47.01	2.2127	10 3 32.9	12.202	7	2 33 0.89	2.2198	18 2 17.1	7.919
8	0 48 59.76	2.2123	10 15 42.8	12.130	8	2 35 14.09	2.2202	18 10 8.7	7.807
9	0 51 12.49	2.2119	10 27 48.3	12.054	9	2 37 27.32	2.2206	18 17 53.9	7.701
10	0 53 25.19	2.2116	10 39 49.3	11.979	10	2 39 40.57	2.2210	18 25 32.8	7.594
11	0 55 37.88	2.2113	10 51 45.8	11.903	11	2 41 53.84	2.2213	18 33 5.2	7.487
12	0 57 50.55	2.2110	11 3 37.7	11.826	12	2 44 7.13	2.2217	18 40 31.2	7.380
13	1 0 3.20	2.2106	11 15 24.9	11.748	13	2 46 20.45	2.2221	18 47 50.8	7.273
14	1 2 15.84	2.2107	11 27 7.5	11.670	14	2 48 33.79	2.2224	18 55 3.9	7.163
15	1 4 28.48	2.2106	11 38 45.3	11.590	15	2 50 47.14	2.2227	19 2 10.4	7.054
16	1 6 41.11	2.2104	11 50 18.3	11.509	16	2 53 0.51	2.2230	19 9 10.4	6.946
17	1 8 53.73	2.2103	12 1 46.4	11.427	17	2 55 13.90	2.2232	19 16 3.9	6.837
18	1 11 6.35	2.2102	12 13 9.6	11.345	18	2 57 27.30	2.2235	19 22 50.8	6.727
19	1 13 18.96	2.2102	12 24 27.8	11.262	19	2 59 40.72	2.2238	19 29 31.2	6.617
20	1 15 31.57	2.2102	12 35 41.1	11.179	20	3 1 54.16	2.2241	19 36 4.9	6.507
21	1 17 44.18	2.2102	12 46 49.3	11.094	21	3 4 7.61	2.2243	19 42 32.0	6.397
22	1 19 56.79	2.2102	12 57 52.4	11.008	22	3 6 21.07	2.2244	19 48 52.5	6.286
23	1 22 9.41	2.2103	N. 13 8 50.3	10.922	23	3 8 34.54	2.2246	19 55 6.3	6.174
24	1 24 22.03	2.2104			24	3 10 48.03	2.2249	N. 20 1 13.4	6.063
SUNDAY 14.					TUESDAY 16.				
0	1 26 34.66	2.2106	13 19 43.0	10.835	0	3 13 1.53	2.2250	N. 20 7 13.9	5.952
1	1 28 47.30	2.2107	13 30 30.5	10.747	1	3 15 15.03	2.2251	20 13 7.7	5.840
2	1 30 59.94	2.2108	13 41 12.6	10.658	2	3 17 28.54	2.2252	20 18 54.7	5.727
3	1 33 12.59	2.2109	13 51 49.4	10.568	3	3 19 42.06	2.2253	20 24 34.9	5.614
4	1 35 25.25	2.2113	14 2 20.8	10.478	4	3 21 55.58	2.2254	20 30 8.4	5.502
5	1 37 37.93	2.2114	14 12 46.8	10.388	5	3 24 9.11	2.2255	20 35 35.1	5.389
6	1 39 50.62	2.2116	14 23 7.4	10.297	6	3 26 22.64	2.2255	20 40 55.1	5.276
7	1 42 3.32	2.2118	14 33 22.4	10.204	7	3 28 36.17	2.2255	20 46 8.3	5.163
8	1 44 16.04	2.2121	14 43 31.8	10.111	8	3 30 49.70	2.2255	20 51 14.7	5.049
9	1 46 28.77	2.2123	14 53 35.7	10.017	9	3 33 3.23	2.2254	20 56 14.2	4.935
10	1 48 41.52	2.2126	15 3 33.9	9.922	10	3 35 16.75	2.2253	21 1 6.9	4.822
11	1 50 54.29	2.2129	15 13 26.4	9.827	11	3 37 30.27	2.2252	21 5 52.8	4.708
12	1 53 7.07	2.2132	15 23 13.2	9.732	12	3 39 43.78	2.2251	21 10 31.9	4.594
13	1 55 19.87	2.2135	15 32 54.3	9.637	13	3 41 57.28	2.2249	21 15 4.1	4.479
14	1 57 32.69	2.2138	15 42 29.6	9.539	14	3 44 10.77	2.2247	21 19 29.4	4.365
15	1 59 45.53	2.2142	15 51 59.0	9.441	15	3 46 24.25	2.2245	21 23 47.9	4.251
16	2 1 58.40	2.2146	16 1 22.5	9.343	16	3 48 37.71	2.2243	21 27 59.5	4.136
17	2 4 11.29	2.2150	16 10 40.1	9.244	17	3 50 51.16	2.2241	21 32 4.2	4.022
18	2 6 24.20	2.2153	16 19 51.8	9.145	18	3 53 4.60	2.2238	21 36 2.1	3.907
19	2 8 37.13	2.2157	16 28 57.5	9.045	19	3 55 18.02	2.2234	21 39 53.1	3.793
20	2 10 50.08	2.2161	16 37 57.2	8.945	20	3 57 31.41	2.2230	21 43 37.1	3.676
21	2 13 3.06	2.2165	16 46 50.9	8.844	21	3 59 44.78	2.2226	21 47 14.2	3.562
22	2 15 16.06	2.2168	16 55 38.5	8.743	22	4 1 58.12	2.2221	21 50 44.5	3.447
23	2 17 29.08	2.2172	17 4 20.0	8.641	23	4 4 11.43	2.2217	21 54 7.9	3.332
24	2 19 42.13	2.2176	N. 17 12 55.4	8.538	24	4 6 24.72	2.2212	N. 21 57 24.3	3.216

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 17.					FRIDAY 19.				
0	4 6 24.72	2.2212	N.21° 57' 24.3"	3.316	0	5 51 45.93	2.1547	N.22° 20' 58.7"	2.157
1	4 8 37.98	2.2207	22 0 33.8	3.101	1	5 53 55.15	2.1525	22 18 46.1	2.202
2	4 10 51.20	2.2201	22 3 36.4	2.987	2	5 56 4.23	2.1509	22 16 27.2	2.367
3	4 13 4.39	2.2195	22 6 32.2	2.872	3	5 58 13.17	2.1479	22 14 2.1	2.471
4	4 15 17.54	2.2188	22 9 21.1	2.757	4	6 0 21.98	2.1457	22 11 30.7	2.576
5	4 17 30.65	2.2182	22 12 3.0	2.641	5	6 2 30.66	2.1435	22 8 53.0	2.680
6	4 19 43.72	2.2174	22 14 38.0	2.526	6	6 4 39.20	2.1411	22 6 9.1	2.783
7	4 21 56.74	2.2167	22 17 6.1	2.411	7	6 6 47.59	2.1386	22 3 19.0	2.886
8	4 24 9.72	2.2159	22 19 27.3	2.297	8	6 8 55.83	2.1362	22 0 22.8	2.988
9	4 26 22.65	2.2151	22 21 41.7	2.182	9	6 11 3.93	2.1337	21 57 20.5	3.090
10	4 28 35.53	2.2142	22 23 49.1	2.066	10	6 13 11.88	2.1313	21 54 12.0	3.192
11	4 30 48.36	2.2133	22 25 49.6	1.952	11	6 15 19.69	2.1289	21 50 57.5	3.293
12	4 33 1.13	2.2123	22 27 43.3	1.837	12	6 17 27.35	2.1264	21 47 36.9	3.393
13	4 35 13.84	2.2113	22 29 30.1	1.722	13	6 19 34.86	2.1238	21 44 10.3	3.493
14	4 37 26.49	2.2104	22 31 10.0	1.607	14	6 21 42.21	2.1213	21 40 37.7	3.593
15	4 39 39.09	2.2094	22 32 43.0	1.493	15	6 23 49.41	2.1188	21 36 59.1	3.693
16	4 41 51.62	2.2083	22 34 9.2	1.380	16	6 25 56.46	2.1162	21 33 14.6	3.793
17	4 44 4.09	2.2072	22 35 28.6	1.266	17	6 28 3.35	2.1135	21 29 24.1	3.890
18	4 46 16.49	2.2061	22 36 41.1	1.152	18	6 30 10.08	2.1108	21 25 27.8	3.987
19	4 48 28.82	2.2049	22 37 46.8	1.038	19	6 32 16.65	2.1082	21 21 25.7	4.084
20	4 50 41.08	2.2036	22 38 45.7	0.924	20	6 34 23.06	2.1056	21 17 17.7	4.181
21	4 52 53.26	2.2023	22 39 37.7	0.810	21	6 36 29.32	2.1030	21 13 3.9	4.277
22	4 55 5.36	2.2010	22 40 22.9	0.697	22	6 38 35.42	2.1003	21 8 44.4	4.373
23	4 57 17.38	2.1997	N.22° 41' 1.3"	0.584	23	6 40 41.35	2.0975	N.21° 4' 19.1"	4.469
THURSDAY 18.					SATURDAY 20.				
0	4 59 29.33	2.1984	N.22° 41' 33.0"	0.472	0	6 42 47.12	2.0946	N.20° 59' 48.1"	4.563
1	5 1 41.19	2.1969	22 41 57.9	0.359	1	6 44 52.73	2.0921	20 55 11.5	4.658
2	5 3 52.96	2.1955	22 42 16.1	0.247	2	6 46 58.17	2.0893	20 50 29.2	4.752
3	5 6 4.65	2.1941	22 42 27.5	0.134	3	6 49 3.44	2.0865	20 45 41.3	4.845
4	5 8 16.25	2.1925	22 42 32.2	+0.022	4	6 51 8.55	2.0837	20 40 47.8	4.937
5	5 10 27.75	2.1909	22 42 30.2	-0.089	5	6 53 13.49	2.0809	20 35 48.8	5.029
6	5 12 39.16	2.1893	22 42 21.5	0.201	6	6 55 18.26	2.0781	20 30 44.3	5.121
7	5 14 50.47	2.1877	22 42 6.1	0.312	7	6 57 22.86	2.0753	20 25 34.3	5.219
8	5 17 1.68	2.1860	22 41 44.0	0.423	8	6 59 27.30	2.0726	20 20 18.9	5.309
9	5 19 12.79	2.1843	22 41 15.3	0.533	9	7 1 31.57	2.0698	20 14 58.1	5.399
10	5 21 23.80	2.1826	22 40 40.0	0.644	10	7 3 35.67	2.0669	20 9 31.9	5.481
11	5 23 34.70	2.1809	22 39 58.0	0.755	11	7 5 39.60	2.0641	20 4 0.4	5.570
12	5 25 45.50	2.1791	22 39 9.4	0.864	12	7 7 43.36	2.0612	19 58 23.5	5.659
13	5 27 56.19	2.1772	22 38 14.3	0.973	13	7 9 46.95	2.0584	19 52 41.3	5.746
14	5 30 6.76	2.1752	22 37 12.6	1.083	14	7 11 50.37	2.0556	19 46 53.9	5.833
15	5 32 17.22	2.1733	22 36 4.3	1.192	15	7 13 53.62	2.0527	19 41 1.4	5.918
16	5 34 27.56	2.1714	22 34 49.5	1.301	16	7 15 56.69	2.0498	19 35 3.7	6.005
17	5 36 37.79	2.1695	22 33 28.2	1.409	17	7 17 59.59	2.0469	19 29 0.8	6.091
18	5 38 47.90	2.1675	22 32 0.4	1.517	18	7 20 2.32	2.0441	19 22 52.8	6.175
19	5 40 57.89	2.1654	22 30 26.1	1.625	19	7 22 4.88	2.0412	19 16 39.8	6.259
20	5 43 7.75	2.1633	22 28 45.4	1.732	20	7 24 7.27	2.0384	19 10 21.7	6.343
21	5 45 17.49	2.1612	22 26 58.3	1.838	21	7 26 9.49	2.0355	19 3 58.6	6.426
22	5 47 27.10	2.1591	22 25 4.8	1.944	22	7 28 11.53	2.0326	18 57 30.6	6.509
23	5 49 36.58	2.1569	22 23 4.9	2.051	23	7 30 13.40	2.0297	18 50 57.6	6.591
24	5 51 45.93	2.1547	N.22° 20' 58.7"	2.157	24	7 32 15.10	2.0269	N.18° 44' 19.7"	6.672

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 21.					TUESDAY 23.				
0	7 32 15.10	2.0269	N.18 44 19.7	6.673	0	9 6 28.60	1.9064	N.12 2 31.2	9.895
1	7 34 16.63	2.0241	18 37 37.0	6.752	1	9 8 22.93	1.9046	11 52 40.2	9.874
2	7 36 17.99	2.0212	18 30 49.5	6.832	2	9 10 17.15	1.9027	11 42 46.3	9.923
3	7 38 19.18	2.0184	18 23 57.2	6.912	3	9 12 11.25	1.9008	11 32 49.5	9.971
4	7 40 20.20	2.0156	18 17 0.1	6.990	4	9 14 5.24	1.8990	11 22 49.8	10.018
5	7 42 21.05	2.0137	18 9 58.4	7.068	5	9 15 59.13	1.8972	11 12 47.3	10.066
6	7 44 21.73	2.0099	18 2 52.0	7.145	6	9 17 52.91	1.8954	11 2 41.9	10.113
7	7 46 22.24	2.0071	17 55 41.0	7.222	7	9 19 46.58	1.8937	10 52 33.7	10.158
8	7 48 22.58	2.0043	17 48 25.4	7.298	8	9 21 40.15	1.8920	10 42 22.9	10.203
9	7 50 22.76	2.0016	17 41 5.2	7.374	9	9 23 33.62	1.8903	10 32 9.4	10.248
10	7 52 22.77	1.9987	17 33 40.5	7.449	10	9 25 26.99	1.8887	10 21 53.2	10.292
11	7 54 22.61	1.9959	17 26 11.3	7.523	11	9 27 20.27	1.8879	10 11 34.4	10.335
12	7 56 22.28	1.9932	17 18 37.7	7.597	12	9 29 13.45	1.8866	10 1 13.0	10.377
13	7 58 21.79	1.9904	17 10 59.7	7.670	13	9 31 6.54	1.8841	9 50 49.1	10.418
14	8 0 21.13	1.9877	17 3 17.3	7.742	14	9 32 59.54	1.8826	9 40 22.8	10.459
15	8 2 20.31	1.9850	16 55 30.6	7.814	15	9 34 52.45	1.8812	9 29 54.0	10.500
16	8 4 19.33	1.9823	16 47 39.6	7.886	16	9 36 45.28	1.8798	9 19 22.8	10.540
17	8 6 18.19	1.9796	16 39 44.3	7.957	17	9 38 38.03	1.8784	9 8 49.2	10.579
18	8 8 16.88	1.9769	16 31 44.8	8.027	18	9 40 30.69	1.8771	8 58 13.3	10.617
19	8 10 15.41	1.9742	16 23 41.1	8.096	19	9 42 23.28	1.8758	8 47 35.1	10.655
20	8 12 13.78	1.9716	16 15 33.3	8.164	20	9 44 15.79	1.8745	8 36 54.7	10.692
21	8 14 12.00	1.9690	16 7 21.4	8.232	21	9 46 8.22	1.8733	8 26 12.1	10.728
22	8 16 10.06	1.9663	15 59 5.4	8.300	22	9 48 0.58	1.8722	8 15 27.3	10.764
23	8 18 7.96	1.9637	N.15 50 45.4	8.367	23	9 49 52.88	1.8711	N. 8 4 40.4	10.798
MONDAY 22.					WEDNESDAY 24.				
0	8 20 5.71	1.9612	N.15 42 21.4	8.433	0	9 51 45.11	1.8699	N. 7 53 51.5	10.833
1	8 22 3.30	1.9586	15 33 53.4	8.499	1	9 53 37.27	1.8688	7 43 0.5	10.867
2	8 24 0.74	1.9561	15 25 21.5	8.563	2	9 55 29.37	1.8679	7 32 7.5	10.900
3	8 25 58.03	1.9536	15 16 45.8	8.627	3	9 57 21.42	1.8670	7 21 12.5	10.932
4	8 27 55.17	1.9511	15 8 6.3	8.690	4	9 59 13.41	1.8661	7 10 15.6	10.963
5	8 29 52.16	1.9486	14 59 23.0	8.753	5	10 1 5.35	1.8652	6 59 16.9	10.994
6	8 31 49.00	1.9461	14 50 35.9	8.816	6	10 2 57.23	1.8643	6 48 16.3	11.025
7	8 33 45.69	1.9437	14 41 45.1	8.877	7	10 4 49.07	1.8636	6 37 13.9	11.054
8	8 35 42.24	1.9413	14 32 50.6	8.938	8	10 6 40.86	1.8628	6 26 9.8	11.082
9	8 37 38.65	1.9390	14 23 52.5	8.998	9	10 8 32.60	1.8620	6 15 4.0	11.111
10	8 39 34.92	1.9366	14 14 50.8	9.058	10	10 10 24.30	1.8613	6 3 56.5	11.139
11	8 41 31.04	1.9342	14 5 45.6	9.117	11	10 12 15.96	1.8607	5 52 47.3	11.167
12	8 43 27.02	1.9319	13 56 36.8	9.176	12	10 14 7.59	1.8602	5 41 36.5	11.193
13	8 45 22.87	1.9297	13 47 24.5	9.233	13	10 15 59.18	1.8596	5 30 24.2	11.218
14	8 47 18.58	1.9274	13 38 8.8	9.290	14	10 17 50.74	1.8591	5 19 10.4	11.243
15	8 49 14.16	1.9252	13 28 49.7	9.347	15	10 19 42.28	1.8587	5 7 55.2	11.266
16	8 51 9.61	1.9230	13 19 27.2	9.402	16	10 21 33.79	1.8583	4 56 38.5	11.290
17	8 53 4.92	1.9208	13 10 1.4	9.457	17	10 23 25.28	1.8580	4 45 20.4	11.312
18	8 55 0.10	1.9187	13 0 32.4	9.511	18	10 25 16.75	1.8577	4 34 1.0	11.334
19	8 56 55.16	1.9166	12 51 0.1	9.565	19	10 27 8.20	1.8574	4 22 40.3	11.356
20	8 58 50.09	1.9145	12 41 24.6	9.618	20	10 28 59.64	1.8572	4 11 18.3	11.377
21	9 0 44.90	1.9125	12 31 45.9	9.671	21	10 30 51.06	1.8569	3 59 55.1	11.397
22	9 2 39.59	1.9105	12 22 4.1	9.723	22	10 32 42.47	1.8568	3 48 30.7	11.416
23	9 4 34.16	1.9084	12 12 19.2	9.774	23	10 34 33.88	1.8567	3 37 5.2	11.434
24	9 6 28.60	1.9064	N.12 2 31.2	9.825	24	10 36 25.28	1.8567	N. 3 25 38.6	11.452

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 25.					SATURDAY 27.				
0	10 36 25.28	1.8567	N. 3 25 38.6	11.452	0	12 6 25.45	1.9197	S. 5 50 57.6	11.454
1	10 38 16.68	1.8567	3 14 10.9	11.470	1	12 8 20.28	1.9151	6 2 24.3	11.435
2	10 40 8.08	1.8568	3 2 42.2	11.486	2	12 10 15.26	1.9175	6 13 49.8	11.416
3	10 41 59.49	1.8569	2 51 12.6	11.501	3	12 12 10.38	1.9200	6 25 14.2	11.397
4	10 43 50.91	1.8571	2 39 42.1	11.516	4	12 14 5.66	1.9226	6 36 37.4	11.375
5	10 45 42.34	1.8572	2 28 10.7	11.531	5	12 16 1.09	1.9252	6 47 59.2	11.352
6	10 47 33.78	1.8574	2 16 38.4	11.545	6	12 17 56.68	1.9279	6 59 19.7	11.330
7	10 49 25.23	1.8577	2 5 5.3	11.557	7	12 19 52.43	1.9306	7 10 38.8	11.307
8	10 51 16.71	1.8581	1 53 31.5	11.569	8	12 21 48.35	1.9333	7 21 56.5	11.289
9	10 53 8.21	1.8586	1 41 57.0	11.581	9	12 23 44.43	1.9362	7 33 12.7	11.257
10	10 54 59.74	1.8590	1 30 21.8	11.592	10	12 25 40.69	1.9391	7 44 27.3	11.231
11	10 56 51.29	1.8594	1 18 46.0	11.602	11	12 27 37.12	1.9419	7 55 40.4	11.204
12	10 58 42.87	1.8600	1 7 9.6	11.612	12	12 29 33.72	1.9448	8 6 51.8	11.176
13	11 0 34.49	1.8606	0 55 32.6	11.620	13	12 31 30.50	1.9479	8 18 1.5	11.147
14	11 2 26.14	1.8619	0 43 55.2	11.628	14	12 33 27.47	1.9510	8 29 9.5	11.118
15	11 4 17.83	1.8618	0 32 17.3	11.635	15	12 35 24.62	1.9541	8 40 15.7	11.088
16	11 6 9.56	1.8626	0 20 39.0	11.641	16	12 37 21.96	1.9572	8 51 20.1	11.057
17	11 8 1.34	1.8634	N. 0 9 0.4	11.647	17	12 39 19.49	1.9604	9 2 22.6	11.025
18	11 9 53.17	1.8642	S. 0 2 38.6	11.652	18	12 41 17.21	1.9637	9 13 23.1	10.992
19	11 11 45.05	1.8651	0 14 17.9	11.657	19	12 43 15.13	1.9670	9 24 21.6	10.958
20	11 13 36.98	1.8660	0 25 57.4	11.660	20	12 45 13.25	1.9704	9 35 18.1	10.924
21	11 15 28.97	1.8670	0 37 37.1	11.663	21	12 47 11.58	1.9738	9 46 12.5	10.888
22	11 17 21.02	1.8680	0 49 17.0	11.665	22	12 49 10.11	1.9773	9 57 4.7	10.852
23	11 19 13.13	1.8691	S. 1 0 56.9	11.666	23	12 51 8.85	1.9808	S. 10 7 54.7	10.814
FRIDAY 26.					SUNDAY 28.				
0	11 21 5.31	1.8702	S. 1 12 36.9	11.667	0	12 53 7.81	1.9844	S. 10 18 42.4	10.776
1	11 22 57.56	1.8714	1 24 16.9	11.667	1	12 55 6.98	1.9880	10 29 27.8	10.737
2	11 24 49.88	1.8727	1 35 56.9	11.666	2	12 57 6.37	1.9916	10 40 10.8	10.697
3	11 26 42.28	1.8739	1 47 36.8	11.664	3	12 59 5.97	1.9953	10 50 51.5	10.657
4	11 28 34.75	1.8753	1 59 16.6	11.662	4	13 1 5.80	1.9991	11 1 29.7	10.615
5	11 30 27.31	1.8767	2 10 56.2	11.659	5	13 3 5.86	2.0028	11 12 5.3	10.572
6	11 32 19.95	1.8781	2 22 35.7	11.656	6	13 5 6.14	2.0066	11 22 38.3	10.528
7	11 34 12.68	1.8796	2 34 14.9	11.651	7	13 7 6.65	2.0105	11 33 8.7	10.484
8	11 36 5.50	1.8811	2 45 53.8	11.645	8	13 9 7.40	2.0145	11 43 36.4	10.438
9	11 37 58.41	1.8827	2 57 32.3	11.639	9	13 11 8.39	2.0185	11 54 1.3	10.392
10	11 39 51.42	1.8843	3 9 10.5	11.632	10	13 13 9.62	2.0225	12 4 23.4	10.345
11	11 41 44.53	1.8861	3 20 48.2	11.624	11	13 15 11.09	2.0265	12 14 42.7	10.297
12	11 43 37.75	1.8878	3 32 25.4	11.616	12	13 17 12.80	2.0306	12 24 59.1	10.248
13	11 45 31.07	1.8896	3 44 2.1	11.607	13	13 19 14.76	2.0348	12 35 12.5	10.198
14	11 47 24.50	1.8914	3 55 38.3	11.597	14	13 21 16.97	2.0390	12 45 22.9	10.147
15	11 49 18.04	1.8933	4 7 13.8	11.586	15	13 23 19.44	2.0432	12 55 30.2	10.095
16	11 51 11.70	1.8952	4 18 48.6	11.574	16	13 25 22.16	2.0475	13 5 34.3	10.041
17	11 53 5.47	1.8972	4 30 22.7	11.562	17	13 27 25.14	2.0518	13 15 35.1	9.987
18	11 54 59.36	1.8993	4 41 56.1	11.549	18	13 29 28.37	2.0561	13 25 32.7	9.932
19	11 56 53.38	1.9014	4 53 28.6	11.535	19	13 31 31.87	2.0606	13 35 27.0	9.877
20	11 58 47.53	1.9035	5 5 0.3	11.521	20	13 33 35.64	2.0650	13 45 17.9	9.820
21	12 0 41.80	1.9057	5 16 31.1	11.506	21	13 35 39.67	2.0694	13 55 5.4	9.762
22	12 2 36.21	1.9080	5 28 1.0	11.489	22	13 37 43.97	2.0739	14 4 49.4	9.703
23	12 4 30.76	1.9103	5 39 29.8	11.472	23	13 39 48.54	2.0785	14 14 29.8	9.643
24	12 6 25.45	1.9127	S. 5 50 57.6	11.454	24	13 41 53.39	2.0832	S. 14 24 6.6	9.582

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 29.					WEDNESDAY 31.				
0	13 41 53.39	2.0639	S. 14° 24' 6.6"	9.589	0	15 27 38.18	2.3974	S. 20° 34' 33.2"	5.449
1	13 43 58.52	2.0677	14 33 39.7	9.591	1	15 29 57.98	2.3995	20 39 56.8	5.337
2	13 46 3.92	2.0693	14 43 9.1	9.458	2	15 32 18.08	2.3376	20 45 13.7	5.294
3	13 48 9.60	2.0670	14 52 34.7	9.394	3	15 34 38.49	2.3427	20 50 23.7	5.110
4	13 50 15.56	2.1017	15 1 56.4	9.399	4	15 36 59.20	2.3477	20 55 26.9	4.996
5	13 52 21.81	2.1065	15 11 14.2	9.364	5	15 39 20.21	2.3597	21 0 23.2	4.890
6	13 54 28.34	2.1113	15 20 28.1	9.197	6	15 41 41.52	2.3577	21 5 12.5	4.763
7	13 56 35.16	2.1161	15 29 37.9	9.129	7	15 44 3.13	2.3696	21 9 54.8	4.646
8	13 58 42.27	2.1309	15 38 43.6	9.061	8	15 46 25.03	2.3674	21 14 30.0	4.597
9	14 0 49.67	2.1358	15 47 45.2	8.999	9	15 48 47.22	2.3729	21 18 58.0	4.497
10	14 2 57.37	2.1307	15 56 42.6	8.990	10	15 51 9.70	2.3771	21 23 18.8	4.396
11	14 5 5.36	2.1357	16 5 35.6	8.948	11	15 53 32.47	2.3818	21 27 32.3	4.164
12	14 7 13.65	2.1407	16 14 24.3	8.775	12	15 55 55.52	2.3866	21 31 38.5	4.049
13	14 9 22.24	2.1457	16 23 8.6	8.701	13	15 58 18.86	2.3913	21 35 37.3	3.918
14	14 11 31.13	2.1507	16 31 48.4	8.696	14	16 0 42.48	2.3959	21 39 28.7	3.794
15	14 13 40.32	2.1557	16 40 23.7	8.550	15	16 3 6.37	2.4005	21 43 12.6	3.668
16	14 15 49.81	2.1607	16 48 54.4	8.473	16	16 5 30.54	2.4051	21 46 48.9	3.549
17	14 17 59.61	2.1658	16 57 20.4	8.395	17	16 7 54.98	2.4096	21 50 17.6	3.415
18	14 20 9.71	2.1709	17 5 41.8	8.317	18	16 10 19.69	2.4140	21 53 38.7	3.287
19	14 22 20.12	2.1761	17 13 58.4	8.236	19	16 12 44.66	2.4184	21 56 52.1	3.158
20	14 24 30.84	2.1812	17 22 10.1	8.154	20	16 15 9.90	2.4228	21 59 57.7	3.028
21	14 26 41.86	2.1863	17 30 16.9	8.072	21	16 17 35.40	2.4271	22 2 55.4	2.897
22	14 28 53.19	2.1915	17 38 18.7	7.988	22	16 20 1.15	2.4314	22 5 45.3	2.766
23	14 31 4.84	2.1967	S. 17° 46' 15.5"	7.904	23	16 22 27.16	2.4356	S. 22° 8' 27.3"	2.633
TUESDAY 30.					THURSDAY, SEPTEMBER 1.				
0	14 33 16.80	2.2019	S. 17° 54' 7.2"	7.819	0	16 24 53.42	2.4397	S. 22° 11' 1.3"	2.500
1	14 35 29.07	2.2071	18 1 53.8	7.739	PHASES OF THE MOON. ☾ First Quarter, . . . 2 10 42.5 ○ Full Moon, . . . 9 9 6.9 ☾ Last Quarter, . . . 16 4 57.7 ● New Moon, . . . 24 8 45.2				
2	14 37 41.65	2.2123	18 9 35.1	7.644					
3	14 39 54.55	2.2176	18 17 11.1	7.555					
4	14 42 7.76	2.2228	18 24 41.7	7.466					
5	14 44 21.29	2.2281	18 32 7.0	7.378	☾ Perigee, 8 23.3 ☾ Apogee, 22 0.0				
6	14 46 35.13	2.2333	18 39 26.8	7.284					
7	14 48 49.29	2.2386	18 46 41.0	7.191					
8	14 51 3.76	2.2439	18 53 49.7	7.097					
9	14 53 18.55	2.2492	19 0 52.7	7.009					
10	14 55 33.66	2.2544	19 7 50.0	6.906					
11	14 57 49.08	2.2597	19 14 41.4	6.808					
12	15 0 4.82	2.2649	19 21 26.9	6.709					
13	15 2 20.87	2.2702	19 28 6.5	6.611					
14	15 4 37.24	2.2755	19 34 40.2	6.511					
15	15 6 53.93	2.2807	19 41 7.8	6.409					
16	15 9 10.93	2.2859	19 47 29.3	6.307					
17	15 11 28.24	2.2912	19 53 44.6	6.203					
18	15 13 45.87	2.2964	19 59 53.6	6.096					
19	15 16 3.81	2.3016	20 5 56.3	5.993					
20	15 18 22.06	2.3068	20 11 52.7	5.886					
21	15 20 40.63	2.3121	20 17 42.6	5.778					
22	15 22 59.51	2.3172	20 23 26.0	5.669					
23	15 25 18.69	2.3223	20 29 2.9	5.560					
24	15 27 38.18	2.3274	S. 20° 34' 33.2"	5.449					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	III ^h .	P. L. of Diff.	VI ^h .	P. L. of Diff.	IX ^h .	P. L. of Diff.
1	Sun	W.	69 53 52	3159	71 20 50	3145	72 48 5	3131	74 15 37	3116
	Antares	E.	48 48 45	2890	47 14 43	2808	45 40 26	2796	44 5 53	2785
	α Aquilæ	E.	101 40 16	3275	100 15 35	3258	98 50 34	3249	97 25 14	3235
2	Sun	W.	81 37 49	3040	83 7 12	3024	84 36 55	3007	86 6 59	2991
	Antares	E.	36 9 9	2792	34 32 58	2710	32 56 31	2697	31 19 47	2685
	α Aquilæ	E.	90 13 44	3147	88 46 31	3133	87 19 1	3119	85 51 14	3105
3	Sun	W.	93 42 35	2905	95 14 48	2887	96 47 24	2868	98 20 24	2849
	Spica	W.	22 44 11	2586	24 23 25	2566	26 3 6	2548	27 43 13	2530
	α Aquilæ	E.	78 28 20	3044	76 59 2	3034	75 29 31	3024	73 59 48	3016
4	Sun	W.	106 11 20	2758	107 46 43	2739	109 22 31	2720	110 58 44	2702
	Spica	W.	36 10 12	2438	37 52 53	2419	39 36 0	2401	41 19 33	2384
	α Aquilæ	E.	66 28 58	2987	64 58 29	2966	63 27 59	2946	61 57 29	2929
5	Sun	W.	119 5 55	2612	120 44 34	2593	122 23 38	2577	124 3 5	2559
	Spica	W.	50 3 43	2295	51 49 50	2278	53 36 22	2260	55 23 20	2244
	α Aquilæ	E.	54 26 32	3034	52 57 2	3053	51 27 55	3076	49 59 16	3104
	Fomalhaut	E.	80 30 1	2773	78 54 58	2762	77 19 40	2752	75 44 9	2744
6	Spica	W.	64 24 13	2164	66 13 35	2149	68 3 19	2135	69 53 25	2121
	Antares	W.	19 11 34	2243	20 58 57	2215	22 47 2	2190	24 35 44	2169
	Fomalhaut	E.	67 44 20	2722	66 8 10	2723	64 32 1	2727	62 55 57	2734
	α Pegasi	E.	85 16 48	2299	83 30 47	2285	81 44 26	2272	79 57 46	2260
7	Spica	W.	79 9 1	2058	81 1 5	2048	82 53 25	2037	84 46 1	2028
	Antares	W.	33 46 31	2085	35 37 54	2071	37 29 38	2059	39 21 40	2048
	Fomalhaut	E.	54 58 54	2809	53 24 38	2835	51 50 56	2867	50 17 55	2905
	α Pegasi	E.	71 0 18	2211	69 12 7	2204	67 23 46	2199	65 35 17	2194
8	Spica	W.	94 12 26	1990	96 6 16	1984	98 0 15	1979	99 54 22	1975
	Antares	W.	48 45 51	2003	50 39 20	1997	52 32 59	1991	54 26 47	1987
	Fomalhaut	E.	42 47 30	2204	41 21 26	2206	39 57 10	2402	38 34 56	2505
	α Pegasi	E.	56 31 47	2192	54 43 7	2196	52 54 34	2203	51 6 11	2212
	Saturn	E.	106 1 12	2015	104 8 1	2009	102 14 41	2004	100 21 13	2000
9	Antares	W.	63 57 7	1977	65 51 18	1977	67 45 28	1979	69 39 36	1981
	α Arietis	E.	83 51 12	1985	81 57 30	1996	80 3 49	1998	78 10 11	2001
	Saturn	E.	90 52 40	1991	88 58 52	1992	87 5 5	1993	85 11 20	1996
	Jupiter	E.	102 39 7	2003	100 45 37	2003	98 52 8	2005	96 58 41	2007
10	Antares	W.	79 9 1	2003	81 2 30	2010	82 55 48	2018	84 48 54	2026
	α Aquilæ	W.	35 11 50	2730	36 28 5	2735	37 46 56	2740	39 8 5	2745
	α Arietis	E.	68 43 37	2028	66 50 46	2036	64 58 8	2045	63 5 44	2055
	Saturn	E.	75 44 1	2021	73 50 59	2028	71 58 8	2036	70 5 30	2044
	Jupiter	E.	87 32 45	2030	85 39 58	2037	83 47 22	2045	81 54 58	2053
	Mars	E.	97 29 45	2183	95 40 52	2190	93 52 10	2198	92 3 40	2206
	Aldebaran	E.	101 42 20	2019	99 49 16	2026	97 56 23	2034	96 3 42	2042
11	α Aquilæ	W.	46 19 27	2010	47 49 27	2009	49 20 19	2003	50 51 56	2002
	α Arietis	E.	53 47 54	2116	51 57 19	2131	50 7 7	2147	48 17 19	2163
	Saturn	E.	60 46 10	2101	58 55 12	2114	57 4 34	2128	55 14 18	2143

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	SUN W.	75° 43' 27"	3101	77° 11' 35"	3087	78° 40' 1"	3071	80° 8' 46"	3056
	Antares E.	42 31 5	2772	40 56 1	2760	39 20 40	2747	37 45 3	2735
	α Aquilæ E.	95 59 34	3208	94 33 34	3193	93 7 16	3177	91 40 39	3162
2	SUN W.	87 37 23	2974	89 8 8	2957	90 39 15	2939	92 10 44	2923
	Antares E.	29 42 47	2673	28 5 31	2661	26 27 59	2651	24 50 13	2642
	α Aquilæ E.	84 23 10	3091	82 54 50	3079	81 26 15	3067	79 57 25	3055
3	SUN W.	99 53 48	2831	101 27 35	2813	103 1 46	2795	104 36 21	2776
	Spica W.	29 23 45	2511	31 4 43	2492	32 46 7	2474	34 27 57	2456
	α Aquilæ E.	72 29 55	3009	70 59 53	3001	69 29 42	2995	67 59 23	2990
4	SUN W.	112 35 21	2684	114 12 23	2666	115 49 49	2647	117 27 40	2629
	Spica W.	43 3 31	2366	44 47 55	2348	46 32 45	2330	48 18 1	2312
	α Aquilæ E.	60 27 2	2993	58 56 40	2998	57 26 25	3007	55 56 21	3019
5	SUN W.	125 42 56	2543	127 23 10	2527	129 3 46	2511	130 44 44	2495
	Spica W.	57 10 42	2227	58 58 29	2211	60 46 40	2195	62 35 15	2180
	α Aquilæ E.	48 31 11	3137	47 3 46	3177	45 37 9	3294	44 11 28	3280
	Fomalhaut E.	74 8 27	2736	72 32 35	2730	70 56 35	2725	69 20 29	2723
6	Spica W.	71 43 52	2107	73 34 40	2094	75 25 48	2082	77 17 15	2070
	Antares W.	26 24 58	2149	28 14 42	2131	30 4 54	2115	31 55 31	2099
	Fomalhaut E.	61 20 2	2742	59 44 18	2753	58 8 49	2768	56 33 39	2767
	α Pegasi E.	78 10 48	2249	76 23 33	2238	74 36 2	2229	72 48 17	2219
7	Spica W.	86 38 52	2019	88 31 57	2010	90 25 15	2003	92 18 45	1996
	Antares W.	41 13 59	2037	43 6 35	2027	44 59 27	2018	46 52 33	2010
	Fomalhaut E.	48 45 42	2949	47 14 25	2999	45 44 11	3057	44 15 9	3125
	α Pegasi E.	63 46 41	2191	61 58 0	2189	60 9 16	2188	58 20 31	2189
8	Spica W.	101 48 35	1972	103 42 53	1970	105 37 14	1969	107 31 37	1968
	Antares W.	56 20 42	1984	58 14 42	1981	60 8 47	1978	62 2 56	1977
	Fomalhaut E.	37 14 59	3666	35 57 36	3631	34 43 6	4024	33 31 50	4256
	α Pegasi E.	49 18 1	2223	47 30 7	2236	45 42 33	2253	43 55 24	2272
	Saturn E.	98 27 39	1996	96 33 59	1994	94 40 15	1992	92 46 28	1991
9	Antares W.	71 33 41	1984	73 27 41	1987	75 21 35	1992	77 15 22	1997
	α Arietis E.	76 16 38	2005	74 23 11	2009	72 29 51	2014	70 36 39	2021
	Saturn E.	83 17 39	1999	81 24 3	2003	79 30 34	2009	77 37 13	2014
	Jupiter E.	95 5 17	2010	93 11 58	2014	91 18 46	2019	89 25 41	2025
10	Antares W.	86 41 47	2035	88 34 26	2046	90 26 49	2056	92 18 56	2067
	α Aquilæ W.	40 31 15	3262	41 56 11	3184	43 22 39	3117	44 50 28	3060
	α Arietis E.	61 13 35	2066	59 21 43	2077	57 30 8	2088	55 38 51	2101
	Saturn E.	68 13 5	2054	66 20 55	2065	64 29 2	2077	62 37 27	2088
	Jupiter E.	80 2 47	2062	78 10 50	2073	76 19 9	2083	74 27 44	2094
	Mars E.	90 15 22	2216	88 27 18	2227	86 39 30	2237	84 51 58	2249
	Aldebaran E.	94 11 13	2051	92 18 58	2061	90 26 59	2072	88 35 16	2083
11	α Aquilæ W.	52 24 12	2278	53 56 59	2259	55 30 11	2242	57 3 44	2229
	α Arietis E.	46 27 56	2181	44 39 0	2199	42 50 31	2218	41 2 31	2239
	Saturn E.	53 24 24	2158	51 34 53	2174	49 45 46	2191	47 57 5	2208

GREENWICH MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Star's Name and Position.		Noon.	P. L. of Dist.	III ^h .	P. L. of Dist.	VI ^h .	P. L. of Dist.	IX ^h .	P. L. of Dist.
11	Jupiter	E.	72° 36' 36"	2106	70° 45' 46"	2119	68° 55' 16"	2132	67° 5' 6"	2146
	Mars	E.	83 4 43	2261	81 17 46	2274	79 31 8	2287	77 44 50	2302
	Aldebaran	E.	86 43 50	2094	84 52 42	2107	83 1 53	2120	81 11 25	2134
	Venus	E.	113 45 16	2398	112 1 39	2412	110 18 21	2426	108 35 23	2441
12	α Aquilæ	W.	58 37 34	2820	60 11 36	2814	61 45 46	2810	63 20 1	2808
	α Arietis	E.	39 15 2	2261	37 28 5	2264	35 41 42	2309	33 55 55	2335
	Saturn	E.	46 8 50	2227	44 21 2	2245	42 33 42	2264	40 46 50	2285
	Jupiter	E.	57 59 42	2223	56 11 47	2239	54 24 17	2256	52 37 13	2273
	Mars	E.	68 58 42	2380	67 14 38	2396	65 30 58	2414	63 47 43	2431
	Aldebaran	E.	72 4 35	2211	70 16 24	2228	68 28 38	2245	66 41 18	2264
	Venus	E.	100 6 1	2522	98 25 18	2540	96 45 0	2559	95 5 8	2577
13	Fomalhaut	W.	45 58 21	3306	47 22 25	3270	48 47 11	3240	50 12 33	3214
	α Pegasi	W.	23 54 17	3276	25 18 56	3178	26 45 32	3100	28 13 42	3039
	Saturn	E.	32 0 15	2398	30 16 37	2424	28 33 36	2452	26 51 15	2482
	Jupiter	E.	43 48 24	2368	42 4 0	2384	40 20 3	2404	38 36 34	2424
	Mars	E.	55 17 51	2525	53 37 12	2543	51 56 59	2563	50 17 13	2583
	Aldebaran	E.	57 51 24	2358	56 6 49	2378	54 22 42	2398	52 39 4	2418
	Venus	E.	86 52 15	2673	85 14 59	2694	83 38 11	2714	82 1 50	2735
	Sun	E.	129 34 35	2653	127 56 52	2672	126 19 34	2691	124 42 42	2710
14	Fomalhaut	W.	57 25 12	3148	58 52 24	3142	60 19 43	3139	61 47 5	3138
	α Pegasi	W.	35 48 47	2885	37 21 25	2873	38 54 19	2864	40 27 24	2859
	Jupiter	E.	30 6 15	2526	28 25 38	2548	26 45 31	2570	25 5 55	2592
	Mars	E.	42 5 5	2681	40 27 59	2701	38 51 20	2720	37 15 7	2740
	Aldebaran	E.	44 8 18	2525	42 27 40	2547	40 47 32	2570	39 7 56	2593
	Venus	E.	74 6 49	2637	72 33 9	2658	70 59 56	2678	69 27 9	2698
	Pollux	E.	86 11 36	2534	84 31 10	2553	82 51 10	2572	81 11 36	2591
	Sun	E.	116 44 47	2808	115 10 30	2828	113 36 39	2848	112 3 13	2868
15	Fomalhaut	W.	69 3 37	3155	70 30 40	3162	71 57 35	3170	73 24 20	3178
	α Pegasi	W.	48 13 24	2867	49 46 25	2873	51 19 19	2879	52 52 5	2887
	Mars	E.	29 20 28	2636	27 46 47	2655	26 13 31	2674	24 40 39	2693
	Venus	E.	61 49 40	2998	60 19 25	3018	58 49 34	3036	57 20 6	3056
	Pollux	E.	73 0 20	2687	71 23 22	2705	69 46 49	2724	68 10 41	2743
	Sun	E.	104 22 20	2964	102 51 22	2983	101 20 48	3002	99 50 38	3021
16	Fomalhaut	W.	80 35 21	3230	82 0 55	3241	83 26 16	3253	84 51 23	3265
	α Pegasi	W.	60 33 14	2933	62 4 51	2942	63 36 16	2953	65 7 28	2963
	Venus	E.	49 58 29	3145	48 31 14	3163	47 4 20	3179	45 37 46	3195
	Pollux	E.	60 16 10	2835	58 42 28	2853	57 9 9	2871	55 36 13	2890
	Sun	E.	92 25 22	3109	90 57 23	3125	89 29 44	3141	88 2 24	3158
17	α Arietis	W.	29 2 59	2267	30 33 28	2269	32 3 54	2293	33 34 16	2297
	Saturn	W.	21 42 53	2208	23 13 8	2206	24 43 26	2205	26 13 45	2206
	Venus	E.	38 29 37	3271	37 4 52	3285	35 40 23	3299	34 16 10	3313
	Pollux	E.	47 57 24	2981	46 26 48	3000	44 56 35	3018	43 26 44	3037
	Sun	E.	80 50 25	3231	79 24 53	3246	77 59 38	3259	76 34 39	3272
	18	α Arietis	W.	41 4 44	3022	42 34 30	3027	44 4 9	3033	45 33 41	3038
Saturn		W.	33 44 34	3015	35 14 28	3021	36 44 15	3026	38 13 55	3031
Jupiter		W.	21 4 3	3026	22 33 44	3030	24 3 20	3034	25 32 50	3040

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV ^h .	P. L. of Diff.	XVIII ^h .	P. L. of Diff.	XXI ^h .	P. L. of Diff.
11	Jupiter	E.	65 15 17	2161	68 25 50	2175	61 36 45	2180	59 48 5	2205
	Mars	E.	75 58 53	2216	74 13 17	2231	72 28 2	2246	70 43 10	2263
	Aldebaran	E.	79 21 18	2148	77 31 32	2163	75 42 9	2179	73 53 10	2195
	Venus	E.	106 52 46	2456	105 10 31	2472	103 28 38	2488	101 47 8	2504
12	α Aquilæ	W.	64 54 19	2208	66 28 36	2211	68 2 49	2216	69 36 56	2222
	α Arietis	E.	32 10 47	2263	30 26 19	2293	28 42 34	2426	26 59 36	2462
	Saturn	E.	39 0 28	2308	37 14 37	2327	35 29 17	2349	33 44 29	2373
	Jupiter	E.	50 50 34	2291	49 4 21	2309	47 18 35	2328	45 33 16	2346
	Mars	E.	62 4 53	2450	60 22 29	2467	58 40 30	2486	56 58 57	2505
	Aldebaran	E.	64 54 25	2269	63 7 59	2300	61 22 8	2319	59 36 28	2338
	Venus	E.	93 25 42	2506	91 46 42	2515	90 8 7	2534	88 29 58	2553
13	Fomalhaut	W.	51 38 25	3194	53 4 41	3178	54 31 17	3164	55 58 9	3155
	α Pegasi	W.	29 43 7	2991	31 13 31	2954	32 44 42	2994	34 16 30	2991
	Saturn	E.	25 9 36	2513	23 28 41	2548	21 48 35	2588	20 9 23	2639
	Jupiter	E.	36 53 33	2443	35 11 0	2464	33 28 56	2486	31 47 21	2505
	Mars	E.	48 37 54	2602	46 59 2	2631	45 20 36	2641	43 42 37	2681
	Aldebaran	E.	50 55 55	2428	49 13 15	2460	47 31 5	2489	45 49 26	2504
	Venus	E.	80 25 56	2755	78 50 29	2775	77 15 29	2796	75 40 56	2816
	Sun	E.	123 6 15	2729	121 30 14	2749	119 54 39	2769	118 19 30	2788
14	Fomalhaut	W.	63 14 29	3122	64 41 52	3141	66 9 12	3145	67 36 27	3149
	α Pegasi	W.	42 0 35	2956	43 33 50	2956	45 7 5	2959	46 40 17	2962
	Jupiter	E.	23 26 49	2615	21 48 15	2640	20 10 14	2666	18 32 48	2693
	Mars	E.	35 39 20	2760	34 3 59	2779	32 29 3	2798	30 54 33	2818
	Aldebaran	E.	37 28 51	2616	35 50 18	2641	34 12 19	2666	32 34 53	2691
	Venus	E.	67 54 48	2919	66 22 53	2939	64 51 24	2959	63 20 20	2978
	Pollux	E.	79 32 29	2610	77 53 48	2629	76 15 33	2649	74 37 44	2667
	Sun	E.	110 30 13	2987	108 57 38	2997	107 25 28	2996	105 53 42	2945
15	Fomalhaut	W.	74 50 55	3188	76 17 19	3197	77 43 32	3207	79 9 33	3218
	α Pegasi	W.	54 24 41	2994	55 57 7	2993	57 29 22	2913	59 1 24	2923
	Mars	E.	23 8 11	2912	21 36 7	2930	20 4 26	2949	18 33 9	2968
	Venus	E.	55 51 2	3074	54 22 21	3092	52 54 2	3110	51 26 5	3128
	Pollux	E.	66 34 58	2762	64 59 40	2780	63 24 46	2798	61 50 16	2817
	Sun	E.	98 20 51	3039	96 51 26	3056	95 22 23	3074	93 53 42	3091
16	Fomalhaut	W.	86 16 15	3278	87 40 52	3291	89 5 14	3304	90 29 21	3318
	α Pegasi	W.	66 38 27	2973	68 9 13	2984	69 39 46	2994	71 10 6	3005
	Venus	E.	44 11 31	2911	42 45 35	2927	41 19 58	2942	39 54 39	2957
	Pollux	E.	54 3 41	2908	52 31 32	2926	50 59 46	2944	49 28 23	2963
	Sun	E.	86 35 24	3173	85 8 43	3188	83 42 20	3203	82 16 14	3217
17	α Arietis	W.	35 4 33	3001	36 34 45	3005	38 4 51	3010	39 34 51	3016
	Saturn	W.	27 44 3	2998	29 14 18	3001	30 44 29	3006	32 14 34	3010
	Venus	E.	32 52 13	3225	31 28 31	3238	30 5 3	3249	28 41 48	3260
	Pollux	E.	41 57 17	3057	40 28 15	3078	38 59 38	3099	37 31 27	3120
	Sun	E.	75 9 55	3265	73 45 26	3297	72 21 11	3308	70 57 9	3320
18	α Arietis	W.	47 3 7	3043	48 32 26	3049	50 1 38	3054	51 30 44	3059
	Saturn	W.	39 43 29	3036	41 12 57	3041	42 42 19	3047	44 11 34	3052
	Jupiter	W.	27 2 13	3045	28 31 30	3051	30 0 40	3056	31 29 44	3061

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Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dif.	IIIh.	P. L. of Dif.	VIh.	P. L. of Dif.	IXh.	P. L. of Dif.
18	Venus E.	27 18 46	3379	25 55 57	3383	24 33 21	3393	23 10 57	3404
	Pollux E.	36 3 42	3143	34 36 25	3168	33 9 38	3194	31 43 22	3223
	Sun E.	69 33 21	3331	68 9 45	3349	66 46 22	3361	65 23 10	3381
19	α Arietis W.	52 59 44	3084	54 28 38	3089	55 57 26	3073	57 26 9	3077
	Saturn W.	45 40 43	3058	47 9 47	3060	48 38 45	3085	50 7 37	3089
	Jupiter W.	32 58 41	3068	34 27 32	3071	35 56 17	3075	37 24 57	3080
	Aldebaran W.	20 23 45	3217	21 49 34	3198	23 15 45	3184	24 42 13	3174
	Mars W.	18 9 54	3259	19 34 53	3264	20 59 47	3269	22 24 35	3274
	Sun E.	58 29 51	3404	57 7 39	3412	55 45 36	3480	54 23 42	3487
20	α Arietis W.	64 48 34	3093	66 16 52	3098	67 45 6	3099	69 13 17	3101
	Saturn W.	57 20 51	3085	58 59 19	3088	60 27 43	3081	61 56 4	3082
	Jupiter W.	44 47 1	3097	46 15 14	3101	47 43 23	3103	49 11 29	3105
	Aldebaran W.	31 57 3	3144	33 24 19	3141	34 51 39	3138	36 19 3	3135
	Mars W.	29 27 19	3299	30 51 40	3295	32 15 57	3299	33 40 10	3301
	Sun E.	47 35 59	3456	46 14 46	3461	44 53 38	3466	43 32 36	3471
21	Saturn W.	69 17 20	3099	70 45 31	3099	72 13 42	3099	73 41 53	3099
	Jupiter W.	56 31 25	3112	57 59 20	3112	59 27 15	3113	60 55 9	3113
	Aldebaran W.	43 36 38	3137	45 4 15	3125	46 31 54	3124	47 59 35	3121
	Mars W.	40 40 40	3309	42 4 41	3309	43 28 42	3309	44 52 43	3310
	Sun E.	36 48 41	3492	35 28 8	3497	34 7 40	3501	32 47 17	3505
22	Saturn W.	81 2 53	3096	82 31 8	3095	83 59 24	3093	85 27 42	3091
	Jupiter W.	68 14 45	3110	69 42 43	3108	71 10 43	3106	72 38 45	3105
	Aldebaran W.	55 18 36	3111	56 46 32	3110	58 14 30	3107	59 42 31	3105
	Mars W.	51 52 49	3306	53 16 54	3305	54 41 0	3304	56 5 7	3302
	Sun E.	26 6 41	3534	24 46 54	3543	23 27 16	3552	22 7 49	3563
26	Sun W.	18 50 35	3461	20 11 43	3435	21 33 20	3413	22 55 22	3393
	Spica E.	30 43 43	2963	29 12 44	2958	27 41 38	2952	26 10 25	2946
	Antares E.	76 15 53	2964	74 44 55	2958	73 13 50	2952	71 42 37	2946
27	Sun W.	29 50 26	3318	31 14 17	3305	32 38 23	3293	34 2 43	3260
	Antares E.	64 4 28	2912	62 32 24	2905	61 0 12	2898	59 27 51	2891
	α Aquilæ E.	115 11 2	3457	113 49 50	3436	112 28 14	3416	111 6 16	3398
28	Sun W.	41 7 52	3223	42 33 34	3211	43 59 30	3199	45 25 40	3188
	Antares E.	51 43 41	2833	50 10 22	2845	48 36 52	2837	47 3 12	2826
	α Aquilæ E.	104 11 24	3314	102 47 29	3300	101 23 17	3286	99 58 49	3272
29	Sun W.	52 39 54	3131	54 7 26	3119	55 35 13	3105	57 3 16	3093
	Antares E.	39 12 11	2787	37 37 26	2779	36 2 31	2771	34 27 25	2763
	α Aquilæ E.	92 52 39	3211	91 26 43	3199	90 0 33	3189	88 34 11	3178
30	Sun W.	64 27 18	3030	65 56 53	3017	67 26 45	3003	68 56 54	2989
	Spica W.	19 26 13	2692	21 3 3	2678	22 40 13	2663	24 17 42	2649
	α Aquilæ E.	81 19 28	3135	79 52 1	3120	78 24 26	3122	76 56 43	3116
31	Sun W.	76 31 56	2920	78 3 49	2905	79 36 1	2891	81 8 32	2876
	Spica W.	32 29 50	2580	34 9 12	2566	35 48 54	2552	37 28 55	2538
	α Aquilæ E.	69 36 37	3097	68 8 24	3096	66 40 10	3097	65 11 57	3090

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
18	Venus	E.	21° 48' 45"	3414	20° 26' 44"	3493	19° 4' 53"	3438	17° 43' 13"	3441
	Pollux	E.	30 17 40	3254	28 52 35	3488	27 28 10	3396	26 4 29	3369
	Sun	E.	64 0 9	3371	62 37 19	3380	61 14 40	3380	59 52 11	3397
19	α Arietis	W.	58 54 47	3081	60 23 20	3084	61 51 49	3088	63 20 13	3091
	Saturn	W.	51 36 24	3073	53 5 7	3076	54 33 46	3080	56 2 20	3082
	Jupiter	W.	38 53 31	3084	40 22 0	3087	41 50 25	3091	43 18 45	3095
	Aldebaran	W.	25 8 53	3165	27 35 44	3158	29 2 44	3158	30 29 51	3148
	Mars	W.	23 49 17	3278	25 13 54	3269	26 38 27	3268	28 2 55	3269
	Sun	E.	53 1 56	3433	51 40 17	3438	50 18 44	3445	48 57 18	3451
20	α Arietis	W.	70 41 26	3103	72 9 32	3105	73 37 36	3105	75 5 39	3106
	Saturn	W.	63 24 23	3094	64 52 40	3096	66 20 55	3097	67 49 8	3098
	Jupiter	W.	50 39 32	3108	52 7 33	3109	53 35 32	3110	55 3 29	3111
	Aldebaran	W.	37 46 30	3133	39 13 59	3139	40 41 30	3130	42 9 3	3129
	Mars	W.	35 4 20	3303	36 28 28	3305	37 52 34	3308	39 16 38	3308
	Sun	E.	42 11 39	3475	40 50 47	3480	39 30 0	3484	38 9 18	3488
21	Saturn	W.	75 10 4	3098	76 38 16	3098	78 6 28	3098	79 34 40	3097
	Jupiter	W.	62 23 3	3113	63 50 57	3119	65 18 52	3111	66 46 48	3110
	Aldebaran	W.	49 27 19	3119	50 55 5	3118	52 22 53	3116	53 50 43	3114
	Mars	W.	46 16 43	3310	47 40 43	3309	49 4 44	3308	50 28 46	3307
	Sun	E.	31 26 58	3509	30 6 44	3515	28 46 36	3521	27 26 35	3527
22	Saturn	W.	86 56 2	3089	88 24 25	3087	89 52 50	3085	91 21 18	3082
	Jupiter	W.	74 6 49	3102	75 34 56	3101	77 3 5	3098	78 31 17	3095
	Aldebaran	W.	61 10 35	3109	62 38 42	3099	64 6 53	3096	65 25 8	3092
	Mars	W.	57 29 16	3300	58 53 28	3297	60 17 43	3295	61 42 0	3292
	Sun	E.	20 48 34	3576	19 29 34	3585	18 10 54	3618	16 52 39	3645
26	Sun	W.	24 17 46	3377	25 40 29	3360	27 3 31	3345	28 26 50	3331
	Spica	E.	24 39 5	2942	23 7 39	2937	21 36 7	2933	20 4 30	2929
	Antares	E.	70 11 16	2939	68 39 47	2939	67 8 9	2926	65 36 23	2919
27	Sun	W.	35 27 18	2968	36 52 7	2957	38 17 9	2946	39 42 24	2936
	Antares	E.	57 55 20	2883	56 22 40	2878	54 49 50	2868	53 16 50	2861
	α Aquilæ	E.	109 43 57	3380	108 21 18	3363	106 58 19	3346	105 35 1	3330
28	Sun	W.	46 52 3	3177	48 18 40	3165	49 45 31	3153	51 12 36	3143
	Antares	E.	45 29 21	2921	43 55 20	2919	42 21 8	2904	40 46 45	2905
	α Aquilæ	E.	98 34 5	3259	97 9 5	3247	95 43 51	3234	94 18 22	3222
29	Sun	W.	58 31 34	3081	60 0 7	3069	61 28 55	3056	62 57 59	3043
	Antares	E.	32 52 9	2756	31 16 43	2748	29 41 7	2741	28 5 22	2735
	α Aquilæ	E.	87 7 36	3168	85 40 49	3160	84 13 52	3152	82 46 45	3143
30	Sun	W.	70 27 20	2976	71 58 3	2962	73 29 3	2948	75 0 21	2935
	Spica	W.	25 55 30	2935	27 33 37	2921	29 12 3	2908	30 50 47	2894
	α Aquilæ	E.	75 28 53	3110	74 0 56	3106	72 32 54	3102	71 4 47	3100
31	Sun	W.	82 41 22	2961	84 14 31	2946	85 47 59	2931	87 21 46	2916
	Spica	W.	39 9 15	2594	40 49 55	2510	42 30 55	2496	44 12 14	2482
	α Aquilæ	E.	63 43 46	3102	62 15 39	3100	60 47 37	3112	59 19 42	3120

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sideral Time of the Semi-diameter passing the Meridian.	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.			
		^h ^m ^s	^s	[°] ['] ["]	["]		^s	^m ^s	^s
Thur.	1	10 42 56.86	9.067	N. 8 8 44.0	-54.58	15 53.79	64.40	0 11.88	0.787
Frid.	2	10 46 34.31	9.055	7 46 50.2	54.90	15 54.03	64.36	0 30.91	0.799
Sat.	3	10 50 11.48	9.042	7 24 49.0	55.20	15 54.27	64.32	0 50.23	0.811
Sun.	4	10 53 48.38	9.031	7 2 40.7	55.49	15 54.51	64.28	1 9.83	0.822
Mon.	5	10 57 25.02	9.022	6 40 25.7	55.77	15 54.76	64.25	1 29.69	0.832
Tues.	6	11 1 1.42	9.013	6 18 4.0	56.04	15 55.00	64.22	1 49.79	0.841
Wed.	7	11 4 37.62	9.004	5 55 36.0	56.30	15 55.25	64.19	2 10.09	0.850
Thur.	8	11 8 13.64	8.997	5 33 2.0	56.54	15 55.50	64.15	2 30.57	0.857
Frid.	9	11 11 49.49	8.991	5 10 22.6	56.77	15 55.75	64.13	2 51.22	0.863
Sat.	10	11 15 25.20	8.986	4 47 37.8	56.98	15 56.00	64.11	3 12.01	0.868
Sun.	11	11 19 0.79	8.981	4 24 48.0	57.17	15 56.25	64.09	3 32.91	0.873
Mon.	12	11 22 36.28	8.977	4 1 53.5	57.35	15 56.50	64.08	3 53.91	0.877
Tues.	13	11 26 11.69	8.974	3 38 54.6	57.52	15 56.75	64.07	4 14.98	0.880
Wed.	14	11 29 47.05	8.973	3 15 51.6	57.69	15 57.00	64.06	4 36.12	0.881
Thur.	15	11 33 22.38	8.972	2 52 44.9	57.84	15 57.26	64.05	4 57.29	0.882
Frid.	16	11 36 57.69	8.972	2 29 34.8	57.97	15 57.50	64.05	5 18.49	0.882
Sat.	17	11 40 33.02	8.973	2 6 21.7	58.10	15 57.76	64.05	5 39.65	0.881
Sun.	18	11 44 8.38	8.975	1 43 5.8	58.20	15 58.02	64.06	6 0.78	0.879
Mon.	19	11 47 43.77	8.976	1 19 47.5	58.30	15 58.28	64.07	6 21.87	0.878
Tues.	20	11 51 19.24	8.979	0 56 27.2	58.37	15 58.54	64.08	6 42.89	0.875
Wed.	21	11 54 54.79	8.983	0 33 5.3	58.43	15 58.81	64.09	7 3.84	0.871
Thur.	22	11 58 30.45	8.988	N. 0 9 42.1	58.48	15 59.08	64.10	7 24.69	0.866
Frid.	23	12 2 6.22	8.993	S. 0 13 42.1	58.52	15 59.35	64.12	7 45.42	0.861
Sat.	24	12 5 42.13	8.999	0 37 6.8	58.53	15 59.62	64.13	8 6.02	0.855
Sun.	25	12 9 18.18	9.005	1 0 31.7	58.53	15 59.90	64.16	8 26.46	0.849
Mon.	26	12 12 54.40	9.013	1 23 56.5	58.52	16 0.18	64.19	8 46.74	0.841
Tues.	27	12 16 30.81	9.021	1 47 20.6	58.48	16 0.46	64.22	9 6.82	0.833
Wed.	28	12 20 7.43	9.030	2 10 43.9	58.43	16 0.74	64.25	9 26.70	0.824
Thur.	29	12 23 44.26	9.040	2 34 6.0	58.37	16 1.02	64.29	9 46.36	0.814
Frid.	30	12 27 21.34	9.051	2 57 26.5	58.31	16 1.30	64.33	10 5.78	0.803
Sat.	31	12 30 58.67	9.062	S. 3 20 45.1	-58.23	16 1.59	64.37	10 24.95	0.792

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sideral Time.

— prefixed to the hourly change of declination indicates that the north declinations are decreasing; the south declinations increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be added to Mean Time.	Diff. for 1 hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
Thur.	1	^h 10 ^m 42 ^s 56.89	9.069	N. 8° 8' 43.8"	54.59	^m 0 ^s 11.88	0.787	^h 10 ^m 43 ^s 8.75
Frid.	2	10 46 34.39	9.057	7 46 49.8	54.91	0 30.92	0.799	10 47 5.31
Sat.	3	10 50 11.61	9.044	7 24 48.3	55.21	0 50.25	0.811	10 51 1.86
Sun.	4	10 53 48.56	9.033	7 2 39.7	55.50	1 9.85	0.822	10 54 58.41
Mon.	5	10 57 25.25	9.024	6 40 24.3	55.78	1 29.71	0.832	10 58 54.96
Tues.	6	11 1 1.70	9.015	6 18 2.3	56.05	1 49.81	0.841	11 2 51.52
Wed.	7	11 4 37.95	9.006	5 55 34.0	56.31	2 10.12	0.850	11 6 48.07
Thur.	8	11 8 14.02	8.999	5 32 59.7	56.55	2 30.60	0.857	11 10 44.62
Frid.	9	11 11 49.92	8.993	5 10 19.9	56.78	2 51.25	0.863	11 14 41.17
Sat.	10	11 15 25.68	8.988	4 47 34.8	56.99	3 12.05	0.868	11 18 37.73
Sun.	11	11 19 1.32	8.983	4 24 44.6	57.19	3 32.96	0.873	11 22 34.28
Mon.	12	11 22 36.86	8.979	4 1 49.8	57.37	3 53.97	0.877	11 26 30.83
Tues.	13	11 26 12.33	8.976	3 38 50.5	57.54	4 15.05	0.880	11 30 27.38
Wed.	14	11 29 47.74	8.975	3 15 47.2	57.71	4 36.19	0.881	11 34 23.94
Thur.	15	11 33 23.12	8.974	2 52 40.1	57.86	4 57.37	0.882	11 38 20.49
Frid.	16	11 36 58.48	8.974	2 29 29.7	57.99	5 18.57	0.882	11 42 17.05
Sat.	17	11 40 33.87	8.975	2 6 16.2	58.12	5 39.73	0.881	11 46 13.60
Sun.	18	11 44 9.28	8.977	1 43 0.0	58.22	6 0.87	0.879	11 50 10.15
Mon.	19	11 47 44.73	8.978	1 19 41.3	58.32	6 21.97	0.878	11 54 6.70
Tues.	20	11 51 20.25	8.981	0 56 20.7	58.39	6 43.00	0.875	11 58 3.26
Wed.	21	11 54 55.85	8.985	0 32 58.5	58.45	7 3.95	0.871	12 1 59.80
Thur.	22	11 58 31.56	8.990	N. 0 9 34.9	58.50	7 24.80	0.866	12 5 56.36
Frid.	23	12 2 7.38	8.995	S. 0 13 49.6	58.54	7 45.53	0.861	12 9 52.91
Sat.	24	12 5 43.34	9.000	0 37 14.6	58.55	8 6.13	0.855	12 13 49.47
Sun.	25	12 9 19.45	9.007	1 0 39.9	58.55	8 26.58	0.849	12 17 46.02
Mon.	26	12 12 55.72	9.015	1 24 5.0	58.54	8 46.86	0.841	12 21 42.58
Tues.	27	12 16 32.18	9.023	1 47 29.5	58.50	9 6.95	0.833	12 25 39.13
Wed.	28	12 20 8.85	9.032	2 10 53.1	58.45	9 26.83	0.824	12 29 35.68
Thur.	29	12 23 45.74	9.042	2 34 15.5	58.39	9 46.49	0.814	12 33 32.23
Frid.	30	12 27 22.87	9.053	2 57 36.3	58.33	10 5.91	0.803	12 37 28.78
Sat.	31	12 31 0.25	9.064	S. 3 20 55.2	58.24	10 25.08	0.792	12 41 25.33

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.
 — prefixed to the hourly change of declination indicates that the north declinations are decreasing;
 the south declinations increasing.

Diff. for 1 hour,
 + 9.8565.
 (Table III.)

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal ϕ .	
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ'						
1	244	159° 9' 5.9	8 14.8	145.31	−0.15	.00037231	−45.1	h m s	13 14 40.71
2	245	160 7 13.9	6 22.7	145.37	−0.01	.00036141	45.5		13 10 44.80
3	246	161 5 23.5	4 32.2	145.43	+0.12	.00035041	45.9		13 6 48.89
4	247	162 3 34.6	2 43.2	145.49	0.22	.00033935	46.2		13 2 52.99
5	248	163 1 47.2	0 55.7	145.56	0.32	.00032822	46.4		12 58 57.08
6	249	163 60 1.3	59 9.7	145.62	0.38	.00031704	46.6		12 55 1.17
7	250	164 58 17.1	57 25.4	145.69	0.43	.00030582	46.8		12 51 5.26
8	251	165 56 34.6	55 42.8	145.76	0.46	.00029456	47.0		12 47 9.36
9	252	166 54 53.9	54 2.0	145.84	0.43	.00028326	47.1		12 43 13.45
10	253	167 53 15.1	52 23.1	145.92	0.39	.00027194	47.2		12 39 17.54
11	254	168 51 38.3	50 46.2	146.01	0.31	.00026059	47.4		12 35 21.64
12	255	169 50 3.4	49 11.3	146.09	0.21	.00024920	47.6		12 31 25.73
13	256	170 48 30.9	47 38.6	146.18	+0.09	.00023778	47.7		12 27 29.82
14	257	171 47 0.3	46 7.9	146.27	−0.04	.00022631	47.9		12 23 33.91
15	258	172 45 31.9	44 39.4	146.39	0.16	.00021479	48.1		12 19 38.00
16	259	173 44 5.7	43 13.1	146.45	0.29	.00020320	48.4		12 15 42.10
17	260	174 42 41.7	41 49.0	146.54	0.39	.00019154	48.8		12 11 46.19
18	261	175 41 19.9	40 27.1	146.63	0.49	.00017979	49.1		12 7 50.28
19	262	176 40 0.3	39 7.4	146.73	0.56	.00016795	49.5		12 3 54.38
20	263	177 38 42.9	37 49.9	146.82	0.62	.00015601	49.9		11 59 58.48
21	264	178 37 27.6	36 34.5	146.91	0.63	.00014397	50.4		11 56 2.57
22	265	179 36 14.5	35 21.3	147.00	0.62	.00013183	50.9		11 52 6.66
23	266	180 35 3.4	34 10.1	147.08	0.57	.00011958	51.3		11 48 10.75
24	267	181 33 54.3	33 0.9	147.16	0.51	.00010723	51.7		11 44 14.85
25	268	182 32 47.2	31 53.7	147.24	0.41	.00009479	52.0		11 40 18.94
26	269	183 31 41.9	30 48.3	147.32	0.28	.00008226	52.3		11 36 23.03
27	270	184 30 38.4	29 44.8	147.39	0.15	.00006965	52.6		11 32 27.12
28	271	185 29 36.7	28 43.0	147.47	−0.01	.00005697	52.9		11 28 31.22
29	272	186 28 36.8	27 43.0	147.54	+0.13	.00004424	53.1		11 24 35.31
30	273	187 27 38.6	26 44.7	147.62	0.26	.00003147	53.2		11 20 39.40
31	274	188 26 42.2	25 48.2	147.69	+0.38	.00001868	−53.3		11 16 43.49
NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0 ^h .0.								Diff. for 1 hour, — 9 ^s .8296. (Table II.)	

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.

	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
							^h ^m	^m	^d
1	15 51.6	15 57.8	58 5.9	+1.88	58 28.7	+1.89	5 55.3	2.39	7.6
2	16 4.0	16 10.1	58 51.4	1.87	59 13.8	1.82	6 53.6	2.46	8.6
3	16 15.9	16 21.4	59 35.2	1.73	59 55.2	1.58	7 53.0	2.47	9.6
4	16 26.3	16 30.5	60 13.2	1.39	60 28.7	1.16	8 52.0	2.43	10.6
5	16 33.9	16 36.3	60 41.1	0.88	60 49.9	+0.57	9 49.5	2.36	11.6
6	16 37.6	16 37.8	60 54.8	+0.23	60 55.4	-0.13	10 45.2	2.28	12.6
7	16 36.8	16 34.6	60 51.7	-0.49	60 43.6	0.85	11 39.2	2.22	13.6
8	16 31.2	16 26.8	60 31.4	1.19	60 15.2	1.49	12 32.0	2.19	14.6
9	16 21.5	16 15.3	59 55.6	1.76	59 33.0	1.98	13 24.3	2.18	15.6
10	16 8.6	16 1.4	59 8.2	2.14	58 41.7	2.25	14 16.6	2.18	16.6
11	15 53.9	15 46.3	58 14.2	2.31	57 46.3	2.31	15 9.2	2.19	17.6
12	15 38.7	15 31.4	57 18.6	2.27	56 51.7	2.19	16 1.9	2.19	18.6
13	15 24.4	15 17.9	56 26.0	2.07	56 1.9	1.93	16 54.2	2.17	19.6
14	15 11.8	15 6.3	55 39.7	1.76	55 19.6	1.57	17 45.6	2.11	20.6
15	15 1.5	14 57.3	55 1.8	1.38	54 46.4	1.18	18 35.5	2.04	21.6
16	14 53.8	14 51.0	54 33.5	0.97	54 23.1	0.76	19 23.6	1.96	22.6
17	14 48.8	14 47.3	54 15.1	0.56	54 9.5	-0.37	20 9.7	1.88	23.6
18	14 46.4	14 46.1	54 6.2	-0.18	54 5.1	0.00	20 54.0	1.81	24.6
19	14 46.4	14 47.2	54 6.2	+0.18	54 9.3	+0.33	21 37.0	1.77	25.6
20	14 48.5	14 50.3	54 14.1	0.47	54 20.6	0.60	22 19.3	1.75	26.6
21	14 52.4	14 54.9	54 28.5	0.72	54 37.7	0.82	23 1.5	1.77	27.6
22	14 57.7	15 0.8	54 48.0	0.90	54 59.3	0.97	23 44.4	1.81	28.6
23	15 4.1	15 7.6	55 11.4	1.04	55 24.2	1.10	0 28.7	1.88	0.0
24	15 11.2	15 15.0	55 37.6	1.14	55 51.5	1.18			1.0
25	15 18.9	15 22.9	56 5.8	1.21	56 20.4	1.24	1 15.0	1.99	2.0
26	15 27.0	15 31.1	56 35.4	1.26	56 50.7	1.28	2 4.0	2.11	3.0
27	15 35.4	15 39.6	57 6.2	1.30	57 21.9	1.31	2 56.0	2.23	4.0
28	15 43.9	15 48.3	57 37.7	1.32	57 53.6	1.33	3 50.8	2.33	5.0
29	15 52.6	15 57.0	58 9.6	1.32	58 25.5	1.31	4 47.6	2.39	6.0
30	16 1.2	16 5.4	58 41.2	1.29	58 56.4	1.24	5 45.2	2.40	7.0
31	16 9.3	16 13.0	59 10.9	1.17	59 24.5	1.07	6 42.5	2.36	8.0
32	16 16.4	16 19.3	59 36.8	+0.95	59 47.5	+0.81	7 38.5	2.30	9.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 1.					SATURDAY 3.				
0	16 ^h 24 ^m 53.42 ^s	2.4397	S. 22° 11' 13"	2.500	0	18 ^h 25 ^m 16.77 ^s	2.5433	S. 21° 26' 36.5"	4.474
1	16 27 19.92	2.4437	22 13 27.3	2.366	1	18 27 49.37	2.5439	21 22 3.6	4.693
2	16 29 46.66	2.4477	22 15 45.2	2.233	2	18 30 21.96	2.5431	21 17 21.8	4.771
3	16 32 13.64	2.4516	22 17 55.1	2.097	3	18 32 54.54	2.5439	21 12 31.1	4.918
4	16 34 40.85	2.4554	22 19 56.8	1.960	4	18 35 27.11	2.5436	21 7 31.6	5.066
5	16 37 8.20	2.4592	22 21 50.3	1.823	5	18 37 59.65	2.5439	21 2 23.2	5.213
6	16 39 35.96	2.4630	22 23 35.6	1.686	6	18 40 32.17	2.5417	20 57 6.0	5.360
7	16 42 3.85	2.4668	22 25 12.6	1.547	7	18 43 4.66	2.5419	20 51 40.0	5.506
8	16 44 31.95	2.4701	22 26 41.3	1.408	8	18 45 37.11	2.5405	20 46 5.3	5.651
9	16 47 0.26	2.4738	22 28 1.6	1.268	9	18 48 9.52	2.5398	20 40 21.9	5.796
10	16 49 28.78	2.4771	22 29 13.5	1.128	10	18 50 41.89	2.5391	20 34 29.8	5.941
11	16 51 57.51	2.4805	22 30 17.0	0.987	11	18 53 14.21	2.5389	20 28 29.0	6.085
12	16 54 26.44	2.4837	22 31 12.0	0.846	12	18 55 46.47	2.5379	20 22 19.6	6.228
13	16 56 55.56	2.4869	22 31 58.5	0.704	13	18 58 18.67	2.5362	20 16 1.6	6.371
14	16 59 24.87	2.4900	22 32 36.4	0.561	14	19 0 50.81	2.5351	20 9 35.1	6.514
15	17 1 54.36	2.4930	22 33 5.8	0.417	15	19 3 22.88	2.5338	20 3 0.0	6.656
16	17 4 24.03	2.4960	22 33 26.5	0.273	16	19 5 54.87	2.5325	19 56 16.4	6.797
17	17 6 53.88	2.4989	22 33 38.6	-0.129	17	19 8 26.78	2.5312	19 49 24.4	6.936
18	17 9 23.90	2.5017	22 33 42.0	+0.016	18	19 10 58.62	2.5299	19 42 24.1	7.075
19	17 11 54.08	2.5044	22 33 36.7	0.161	19	19 13 30.37	2.5283	19 35 15.4	7.214
20	17 14 24.42	2.5070	22 33 22.7	0.307	20	19 16 2.02	2.5267	19 27 58.4	7.353
21	17 16 54.92	2.5095	22 32 59.9	0.459	21	19 18 33.58	2.5251	19 20 33.2	7.490
22	17 19 25.56	2.5119	22 32 28.4	0.598	22	19 21 5.04	2.5235	19 12 59.7	7.626
23	17 21 56.35	2.5143	S. 22° 31' 48.1"	0.746	23	19 23 36.40	2.5218	S. 19° 5' 18.1"	7.761
FRIDAY 2.					SUNDAY 4.				
0	17 24 27.28	2.5168	S. 22° 30' 58.9"	0.893	0	19 26 7.66	2.5200	S. 18° 57' 28.4"	7.896
1	17 26 58.34	2.5187	22 30 0.9	1.041	1	19 28 38.80	2.5181	18 49 30.6	8.030
2	17 29 29.53	2.5208	22 28 54.0	1.189	2	19 31 9.83	2.5169	18 41 24.8	8.162
3	17 32 0.81	2.5228	22 27 38.2	1.337	3	19 33 40.74	2.5149	18 33 11.2	8.293
4	17 34 32.27	2.5247	22 26 13.5	1.486	4	19 36 11.53	2.5129	18 24 49.7	8.424
5	17 37 3.81	2.5265	22 24 39.9	1.635	5	19 38 42.20	2.5101	18 16 20.3	8.554
6	17 39 35.45	2.5282	22 22 57.3	1.784	6	19 41 12.74	2.5079	18 7 43.2	8.683
7	17 42 7.19	2.5298	22 21 5.8	1.933	7	19 43 43.15	2.5057	17 58 58.4	8.811
8	17 44 39.03	2.5314	22 19 5.3	2.082	8	19 46 13.43	2.5035	17 50 5.9	8.938
9	17 47 10.96	2.5328	22 16 55.9	2.232	9	19 48 43.57	2.5019	17 41 5.9	9.063
10	17 49 42.97	2.5342	22 14 37.5	2.382	10	19 51 13.57	2.4988	17 31 58.4	9.188
11	17 52 15.06	2.5354	22 12 10.1	2.532	11	19 53 43.43	2.4964	17 22 43.4	9.311
12	17 54 47.22	2.5366	22 9 33.7	2.682	12	19 56 13.14	2.4940	17 13 21.1	9.432
13	17 57 19.45	2.5377	22 6 48.3	2.832	13	19 58 42.71	2.4916	17 3 51.5	9.553
14	17 59 51.74	2.5386	22 3 53.9	2.981	14	20 1 12.13	2.4890	16 54 14.7	9.673
15	18 2 24.08	2.5394	22 0 50.6	3.131	15	20 3 41.39	2.4864	16 44 30.7	9.793
16	18 4 56.47	2.5402	21 57 38.2	3.281	16	20 6 10.50	2.4838	16 34 39.6	9.910
17	18 7 28.91	2.5410	21 54 16.9	3.430	17	20 8 39.45	2.4819	16 24 41.5	10.025
18	18 10 1.39	2.5416	21 50 46.6	3.580	18	20 11 8.25	2.4786	16 14 36.6	10.139
19	18 12 33.90	2.5421	21 47 7.3	3.730	19	20 13 36.89	2.4759	16 4 24.8	10.253
20	18 15 6.44	2.5425	21 43 19.0	3.879	20	20 16 5.36	2.4739	15 54 6.2	10.366
21	18 17 39.00	2.5428	21 39 21.8	4.028	21	20 18 33.67	2.4704	15 43 40.9	10.477
22	18 20 11.58	2.5431	21 35 15.6	4.177	22	20 21 1.81	2.4677	15 33 9.0	10.586
23	18 22 44.17	2.5432	21 31 0.5	4.326	23	20 23 29.79	2.4650	15 22 30.6	10.694
24	18 25 16.77	2.5433	S. 21° 26' 36.5"	4.474	24	20 25 57.61	2.4622	S. 15° 11' 45.7"	10.802

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 5.					WEDNESDAY 7.				
0	20 25 57.61	2.4622	S. 15° 11' 45.7"	10.802	0	22 20 51.11	2.3308	S. 4° 59' 44.9"	14.061
1	20 28 25.26	2.4593	15 0 54.4	10.907	1	22 23 10.85	2.3279	4 45 40.4	14.087
2	20 30 52.73	2.4564	14 49 56.9	11.010	2	22 25 30.46	2.3257	4 31 34.5	14.110
3	20 33 20.03	2.4536	14 38 53.2	11.119	3	22 27 49.94	2.3236	4 17 27.2	14.132
4	20 35 47.16	2.4507	14 27 43.4	11.214	4	22 30 9.29	2.3215	4 3 18.6	14.154
5	20 38 14.12	2.4478	14 16 27.5	11.314	5	22 32 28.52	2.3194	3 49 8.7	14.174
6	20 40 40.90	2.4449	14 5 5.7	11.412	6	22 34 47.62	2.3173	3 34 57.7	14.192
7	20 43 7.51	2.4420	13 53 38.1	11.508	7	22 37 6.60	2.3154	3 20 45.7	14.207
8	20 45 33.94	2.4391	13 42 4.7	11.604	8	22 39 25.47	2.3135	3 6 32.9	14.220
9	20 48 0.20	2.4362	13 30 25.6	11.697	9	22 41 44.22	2.3115	2 52 19.3	14.233
10	20 50 26.28	2.4333	13 18 41.0	11.789	10	22 44 2.85	2.3096	2 38 5.0	14.243
11	20 52 52.18	2.4303	13 6 50.9	11.880	11	22 46 21.37	2.3078	2 23 50.1	14.252
12	20 55 17.91	2.4273	12 54 55.4	11.969	12	22 48 39.79	2.3061	2 9 34.8	14.258
13	20 57 43.46	2.4243	12 42 54.6	12.057	13	22 50 58.10	2.3043	1 55 19.1	14.264
14	21 0 8.83	2.4214	12 30 48.6	12.142	14	22 53 16.31	2.3026	1 41 3.1	14.267
15	21 2 34.03	2.4185	12 18 37.6	12.225	15	22 55 34.41	2.3009	1 26 47.0	14.269
16	21 4 59.05	2.4155	12 6 21.6	12.308	16	22 57 52.41	2.2993	1 12 30.8	14.269
17	21 7 23.89	2.4126	11 54 0.6	12.390	17	23 0 10.32	2.2977	0 58 14.7	14.267
18	21 9 48.56	2.4097	11 41 34.8	12.469	18	23 2 28.13	2.2961	0 43 58.7	14.264
19	21 12 13.05	2.4067	11 29 4.3	12.547	19	23 4 45.85	2.2946	0 29 43.0	14.259
20	21 14 37.37	2.4038	11 16 29.2	12.623	20	23 7 3.48	2.2932	0 15 27.6	14.253
21	21 17 1.51	2.4009	11 3 49.6	12.697	21	23 9 21.03	2.2917	S. 0 1 12.6	14.245
22	21 19 25.48	2.3980	10 51 5.6	12.770	22	23 11 38.49	2.2903	N. 0 13 1.8	14.235
23	21 21 49.27	2.3951	S. 10 38 17.2	12.842	23	23 13 55.87	2.2889	N. 0 27 15.6	14.224
TUESDAY 6.					THURSDAY 8.				
0	21 24 12.89	2.3922	S. 10 25 24.6	12.911	0	23 16 13.16	2.2876	N. 0 41 28.7	14.211
1	21 26 36.34	2.3894	10 12 27.9	12.978	1	23 18 30.38	2.2864	0 55 40.9	14.196
2	21 28 59.62	2.3865	9 59 27.2	13.044	2	23 20 47.53	2.2851	1 9 52.2	14.179
3	21 31 22.72	2.3837	9 46 22.6	13.108	3	23 23 4.60	2.2839	1 24 2.4	14.160
4	21 33 45.66	2.3809	9 33 14.2	13.171	4	23 25 21.60	2.2828	1 38 11.4	14.141
5	21 36 8.43	2.3781	9 20 2.1	13.233	5	23 27 38.54	2.2817	1 52 19.3	14.121
6	21 38 31.03	2.3753	9 6 46.3	13.291	6	23 29 55.41	2.2807	2 6 25.9	14.098
7	21 40 53.47	2.3726	8 53 27.1	13.348	7	23 32 12.22	2.2797	2 20 31.1	14.073
8	21 43 15.74	2.3699	8 40 4.5	13.405	8	23 34 28.97	2.2786	2 34 34.7	14.046
9	21 45 37.85	2.3672	8 26 38.5	13.460	9	23 36 45.65	2.2776	2 48 36.6	14.018
10	21 47 59.80	2.3645	8 13 9.3	13.512	10	23 39 2.28	2.2767	3 2 36.8	13.989
11	21 50 21.59	2.3619	7 59 37.1	13.562	11	23 41 18.86	2.2759	3 16 35.3	13.959
12	21 52 43.23	2.3593	7 46 1.9	13.611	12	23 43 35.39	2.2751	3 30 31.9	13.927
13	21 55 4.71	2.3567	7 32 23.8	13.658	13	23 45 51.87	2.2743	3 44 26.5	13.893
14	21 57 26.04	2.3542	7 18 42.9	13.703	14	23 48 8.30	2.2735	3 58 19.0	13.858
15	21 59 47.21	2.3516	7 4 59.4	13.747	15	23 50 24.69	2.2728	4 12 9.4	13.821
16	22 2 8.23	2.3490	6 51 13.3	13.788	16	23 52 41.04	2.2722	4 25 57.5	13.782
17	22 4 29.09	2.3464	6 37 24.8	13.828	17	23 54 57.35	2.2715	4 39 43.3	13.742
18	22 6 49.80	2.3440	6 23 33.9	13.867	18	23 57 13.62	2.2709	4 53 26.6	13.701
19	22 9 10.37	2.3416	6 9 40.8	13.903	19	23 59 29.86	2.2704	5 7 7.4	13.659
20	22 11 30.80	2.3392	5 55 45.5	13.939	20	0 1 46.07	2.2698	5 20 45.7	13.615
21	22 13 51.08	2.3368	5 41 48.1	13.972	21	0 4 2.24	2.2693	5 34 21.2	13.569
22	22 16 11.22	2.3346	5 27 48.8	14.003	22	0 6 18.38	2.2688	5 47 53.9	13.522
23	22 18 31.23	2.3324	5 13 47.7	14.033	23	0 8 34.50	2.2684	6 1 23.8	13.473
24	22 20 51.11	2.3302	S. 4 59 44.9	14.061	24	0 10 50.59	2.2680	N. 6 14 50.7	13.423

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 9.					SUNDAY 11.				
0	h m s	s	N. ° ' "	"	0	h m s	s	N. ° ' "	"
0	0 10 50.59	2.9680	6 14 50.7	13.423	1	1 59 44.60	2.9757	15 38 8.7	9.636
1	0 13 6.66	2.9677	6 28 14.5	13.379	2	2 2 1.16	2.9761	15 47 43.8	9.534
2	0 15 22.71	2.9673	6 41 35.3	13.330	3	2 4 17.74	2.9765	15 57 12.8	9.431
3	0 17 38.74	2.9670	6 54 52.9	13.286	4	2 6 34.34	2.9769	16 6 35.6	9.327
4	0 19 54.75	2.9668	7 8 7.2	13.240	5	2 8 50.97	2.9773	16 15 52.1	9.223
5	0 22 10.75	2.9666	7 21 18.1	13.193	6	2 11 7.62	2.9776	16 25 2.4	9.119
6	0 24 26.74	2.9664	7 34 25.6	13.096	7	2 13 24.28	2.9779	16 34 6.4	9.013
7	0 26 42.71	2.9662	7 47 29.6	13.037	8	2 15 40.96	2.9783	16 43 4.0	8.907
8	0 28 58.68	2.9661	8 0 30.0	12.975	9	2 17 57.67	2.9787	16 51 55.2	8.801
9	0 31 14.64	2.9659	8 13 26.6	12.913	10	2 20 14.40	2.9790	17 0 40.1	8.694
10	0 33 30.59	2.9658	8 26 19.5	12.850	11	2 22 31.15	2.9792	17 9 18.5	8.585
11	0 35 46.54	2.9657	8 39 8.6	12.785	12	2 24 47.91	2.9795	17 17 50.3	8.476
12	0 38 2.48	2.9657	8 51 53.7	12.719	13	2 27 4.69	2.9798	17 26 15.6	8.367
13	0 40 18.42	2.9657	9 4 34.9	12.653	14	2 29 21.49	2.9801	17 34 34.4	8.257
14	0 42 34.36	2.9657	9 17 12.1	12.585	15	2 31 38.30	2.9803	17 42 46.5	8.147
15	0 44 50.31	2.9658	9 29 45.1	12.515	16	2 33 55.13	2.9806	17 50 52.0	8.037
16	0 47 6.26	2.9659	9 42 12.9	12.444	17	2 36 11.97	2.9808	17 58 50.9	7.926
17	0 49 22.22	2.9660	9 54 38.4	12.372	18	2 38 28.82	2.9809	18 6 43.1	7.814
18	0 51 38.18	2.9661	10 6 58.6	12.300	19	2 40 45.68	2.9811	18 14 28.6	7.702
19	0 53 54.15	2.9662	10 19 14.4	12.226	20	2 43 2.55	2.9812	18 22 7.3	7.589
20	0 56 10.13	2.9663	10 31 25.7	12.150	21	2 45 19.43	2.9814	18 29 39.3	7.476
21	0 58 26.11	2.9665	10 43 32.4	12.073	22	2 47 36.32	2.9815	18 37 4.5	7.362
22	1 0 42.11	2.9667	10 55 34.5	11.996	23	2 49 53.21	2.9815	18 44 22.8	7.248
23	1 2 58.12	2.9669	N.11 7 32.0	11.918	24	2 52 10.10	2.9816	N.18 51 34.3	7.135
SATURDAY 10.					MONDAY 12.				
0	1 5 14.14	2.9672	N.11 19 24.7	11.838	0	2 54 27.00	2.9817	N.18 58 39.0	7.021
1	1 7 30.18	2.9674	11 31 12.6	11.757	1	2 56 43.90	2.9817	19 5 36.8	6.905
2	1 9 46.23	2.9677	11 42 55.6	11.675	2	2 59 0.80	2.9817	19 12 27.6	6.789
3	1 12 2.30	2.9680	11 54 33.6	11.592	3	3 1 17.70	2.9817	19 19 11.5	6.673
4	1 14 18.39	2.9682	12 6 6.6	11.508	4	3 3 34.60	2.9816	19 25 48.4	6.558
5	1 16 34.49	2.9685	12 17 34.6	11.424	5	3 5 51.49	2.9814	19 32 18.4	6.442
6	1 18 50.61	2.9688	12 28 57.5	11.338	6	3 8 8.37	2.9813	19 38 41.4	6.325
7	1 21 6.75	2.9692	12 40 15.2	11.251	7	3 10 25.25	2.9811	19 44 57.4	6.208
8	1 23 22.91	2.9695	12 51 27.6	11.163	8	3 12 42.11	2.9809	19 51 6.4	6.091
9	1 25 39.09	2.9699	13 2 34.8	11.075	9	3 14 58.96	2.9807	19 57 8.3	5.973
10	1 27 55.30	2.9703	13 13 36.6	10.984	10	3 17 15.80	2.9805	20 3 3.2	5.856
11	1 30 11.53	2.9707	13 24 32.9	10.893	11	3 19 32.62	2.9803	20 8 51.0	5.738
12	1 32 27.78	2.9710	13 35 23.8	10.802	12	3 21 49.43	2.9800	20 14 31.7	5.619
13	1 34 44.05	2.9714	13 46 9.1	10.709	13	3 24 6.22	2.9796	20 20 5.3	5.501
14	1 37 0.35	2.9718	13 56 48.9	10.616	14	3 26 22.98	2.9793	20 25 31.8	5.383
15	1 39 16.67	2.9722	14 7 23.1	10.522	15	3 28 39.72	2.9787	20 30 51.2	5.264
16	1 41 33.01	2.9725	14 17 51.6	10.427	16	3 30 56.43	2.9783	20 36 3.5	5.145
17	1 43 49.37	2.9729	14 28 14.3	10.330	17	3 33 13.12	2.9779	20 41 8.6	5.026
18	1 46 5.76	2.9733	14 38 31.2	10.233	18	3 35 29.78	2.9773	20 46 6.6	4.907
19	1 48 22.17	2.9737	14 48 42.3	10.136	19	3 37 46.40	2.9768	20 50 57.4	4.787
20	1 50 38.61	2.9742	14 58 47.5	10.038	20	3 40 2.99	2.9763	20 55 41.1	4.667
21	1 52 55.07	2.9746	15 8 46.8	9.939	21	3 42 19.55	2.9757	21 0 17.6	4.548
22	1 55 11.56	2.9750	15 18 40.2	9.839	22	3 44 36.07	2.9749	21 4 46.9	4.429
23	1 57 28.07	2.9753	15 28 27.5	9.738	23	3 46 52.54	2.9742	21 9 9.1	4.310
24	1 59 44.60	2.9757	N.15 38 8.7	9.636	24	3 49 8.97	2.9734	N.21 13 24.1	4.190

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 13.					THURSDAY 15.				
0	3 49 8.97	2.9734	N.21° 13' 24.1"	4.190	0	5 36 40.23	2.1918	N.22° 18' 25.0"	1.395
1	3 51 25.35	2.9737	21 17 31.9	4.070	1	5 38 51.66	2.1933	22 16 58.0	1.504
2	3 53 41.69	2.9719	21 21 32.5	3.950	2	5 41 2.94	2.1938	22 15 24.5	1.613
3	3 55 57.98	2.9710	21 25 25.9	3.831	3	5 43 14.07	2.1942	22 13 44.5	1.721
4	3 58 14.21	2.9701	21 29 12.2	3.712	4	5 45 25.04	2.1914	22 11 58.0	1.830
5	4 0 30.39	2.9692	21 32 51.3	3.593	5	5 47 35.84	2.1787	22 10 5.1	1.936
6	4 2 46.51	2.9682	21 36 23.2	3.473	6	5 49 46.48	2.1780	22 8 5.7	2.043
7	4 5 2.57	2.9673	21 39 47.9	3.353	7	5 51 56.96	2.1732	22 5 59.9	2.149
8	4 7 18.57	2.9661	21 43 5.4	3.232	8	5 54 7.27	2.1705	22 3 47.8	2.255
9	4 9 34.50	2.9650	21 46 15.7	3.112	9	5 56 17.42	2.1677	22 1 29.3	2.361
10	4 11 50.37	2.9639	21 49 18.9	2.993	10	5 58 27.40	2.1649	21 59 4.5	2.465
11	4 14 6.17	2.9627	21 52 14.9	2.873	11	6 0 37.21	2.1622	21 56 33.5	2.569
12	4 16 21.89	2.9614	21 55 3.7	2.754	12	6 2 46.86	2.1593	21 53 56.2	2.673
13	4 18 37.54	2.9602	21 57 45.4	2.635	13	6 4 56.33	2.1564	21 51 12.7	2.777
14	4 20 53.12	2.9590	22 0 19.9	2.515	14	6 7 5.63	2.1535	21 48 23.0	2.880
15	4 23 8.62	2.9577	22 2 47.2	2.396	15	6 9 14.75	2.1506	21 45 27.1	2.982
16	4 25 24.04	2.9563	22 5 7.4	2.277	16	6 11 23.70	2.1477	21 42 25.1	3.084
17	4 27 39.37	2.9548	22 7 20.5	2.159	17	6 13 32.47	2.1447	21 39 17.0	3.185
18	4 29 54.61	2.9533	22 9 26.5	2.041	18	6 15 41.06	2.1417	21 36 2.9	3.286
19	4 32 9.77	2.9518	22 11 25.4	1.922	19	6 17 49.47	2.1387	21 32 42.7	3.387
20	4 34 24.83	2.9502	22 13 17.2	1.803	20	6 19 57.71	2.1358	21 29 16.5	3.487
21	4 36 39.80	2.9487	22 15 1.8	1.685	21	6 22 5.77	2.1328	21 25 44.3	3.586
22	4 38 54.67	2.9471	22 16 39.4	1.567	22	6 24 13.65	2.1298	21 22 6.2	3.684
23	4 41 9.45	2.9455	N.22° 18' 9.9"	1.450	23	6 26 21.35	2.1267	N.21° 18' 22.2"	3.782
WEDNESDAY 14.					FRIDAY 16.				
0	4 43 24.13	2.9433	N.22° 19' 33.4"	1.333	0	6 28 28.86	2.1237	N.21° 14' 32.3"	3.880
1	4 45 38.70	2.9420	22 20 49.9	1.216	1	6 30 36.19	2.1207	21 10 36.6	3.977
2	4 47 53.17	2.9402	22 21 59.3	1.098	2	6 32 43.34	2.1176	21 6 35.1	4.074
3	4 50 7.53	2.9384	22 23 1.7	0.980	3	6 34 50.30	2.1145	21 2 27.7	4.171
4	4 52 21.78	2.9366	22 23 57.1	0.865	4	6 36 57.08	2.1114	20 58 14.6	4.266
5	4 54 35.92	2.9347	22 24 45.5	0.749	5	6 39 3.67	2.1083	20 53 55.8	4.360
6	4 56 49.94	2.9328	22 25 27.0	0.633	6	6 41 10.08	2.1052	20 49 31.4	4.454
7	4 59 3.85	2.9308	22 26 1.5	0.517	7	6 43 16.30	2.1021	20 45 1.3	4.548
8	5 1 17.64	2.9287	22 26 29.1	0.402	8	6 45 22.33	2.0990	20 40 25.6	4.642
9	5 3 31.30	2.9267	22 26 49.8	0.287	9	6 47 28.18	2.0959	20 35 44.3	4.734
10	5 5 44.84	2.9246	22 27 3.6	0.172	10	6 49 33.84	2.0927	20 30 57.5	4.826
11	5 7 58.25	2.9225	22 27 10.5	+0.058	11	6 51 39.31	2.0896	20 26 5.2	4.918
12	5 10 11.54	2.9204	22 27 10.6	-0.056	12	6 53 44.59	2.0864	20 21 7.3	5.010
13	5 12 24.70	2.9182	22 27 3.8	0.170	13	6 55 49.68	2.0833	20 16 4.0	5.100
14	5 14 37.72	2.9159	22 26 50.2	0.283	14	6 57 54.59	2.0802	20 10 55.3	5.189
15	5 16 50.61	2.9137	22 26 29.9	0.395	15	6 59 59.31	2.0771	20 5 41.3	5.278
16	5 19 3.36	2.9114	22 26 2.8	0.508	16	7 2 3.84	2.0740	20 0 21.9	5.367
17	5 21 15.97	2.9091	22 25 29.0	0.620	17	7 4 8.19	2.0709	19 54 57.2	5.455
18	5 23 28.45	2.9067	22 24 48.4	0.732	18	7 6 12.35	2.0677	19 49 27.3	5.543
19	5 25 40.78	2.9043	22 24 1.1	0.844	19	7 8 16.32	2.0646	19 43 52.1	5.630
20	5 27 52.97	2.9019	22 23 7.1	0.955	20	7 10 20.10	2.0615	19 38 11.7	5.716
21	5 30 5.01	2.1994	22 22 6.5	1.066	21	7 12 23.70	2.0584	19 32 26.2	5.801
22	5 32 16.90	2.1969	22 20 59.2	1.176	22	7 14 27.11	2.0552	19 26 35.6	5.886
23	5 34 28.64	2.1944	22 19 45.4	1.285	23	7 16 30.33	2.0521	19 20 39.9	5.971
24	5 36 40.23	2.1918	N.22° 18' 25.0"	1.395	24	7 18 33.36	2.0490	N.19° 14' 39.1"	6.055

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 17.					MONDAY 19.				
0	7 18 33.36	2.0480	N.19° 14' 39.1"	6.055	0	8 53 37.38	1.9808	N.12° 58' 50.4"	9.370
1	7 20 36.21	2.0459	19 8 33.3	6.138	1	8 55 32.57	1.9187	12 49 26.6	9.493
2	7 22 38.87	2.0428	19 2 22.5	6.221	2	8 57 27.63	1.9167	12 39 59.6	9.477
3	7 24 41.35	2.0397	18 56 6.8	6.303	3	8 59 22.57	1.9148	12 30 29.3	9.531
4	7 26 43.64	2.0367	18 49 46.2	6.384	4	9 1 17.40	1.9129	12 20 55.9	9.583
5	7 28 45.75	2.0337	18 43 20.7	6.466	5	9 3 12.12	1.9110	12 11 19.4	9.634
6	7 30 47.68	2.0307	18 36 50.3	6.547	6	9 5 6.72	1.9092	12 1 30.8	9.685
7	7 32 49.43	2.0276	18 30 15.1	6.626	7	9 7 1.22	1.9074	11 51 57.2	9.735
8	7 34 50.99	2.0245	18 23 35.2	6.704	8	9 8 55.61	1.9056	11 42 11.6	9.785
9	7 36 52.37	2.0215	18 16 50.6	6.783	9	9 10 49.89	1.9038	11 32 23.0	9.834
10	7 38 53.57	2.0185	18 10 1.3	6.861	10	9 12 44.07	1.9022	11 22 31.5	9.883
11	7 40 54.59	2.0156	18 3 7.3	6.938	11	9 14 38.15	1.9006	11 12 37.1	9.931
12	7 42 55.44	2.0127	17 56 8.7	7.015	12	9 16 32.14	1.8990	11 2 39.8	9.978
13	7 44 56.11	2.0097	17 49 5.5	7.092	13	9 18 26.03	1.8974	10 52 39.7	10.024
14	7 46 56.60	2.0067	17 41 57.7	7.168	14	9 20 19.83	1.8958	10 42 36.9	10.070
15	7 48 56.91	2.0038	17 34 45.4	7.242	15	9 22 13.53	1.8943	10 32 31.3	10.116
16	7 50 57.05	2.0009	17 27 28.7	7.315	16	9 24 7.15	1.8929	10 22 23.0	10.160
17	7 52 57.02	1.9980	17 20 7.6	7.388	17	9 26 0.68	1.8914	10 12 12.1	10.204
18	7 54 56.81	1.9951	17 12 42.1	7.461	18	9 27 54.12	1.8900	10 1 58.5	10.248
19	7 56 56.43	1.9923	17 5 12.2	7.534	19	9 29 47.48	1.8887	9 51 42.3	10.291
20	7 58 55.88	1.9895	16 57 38.0	7.607	20	9 31 40.76	1.8874	9 41 23.6	10.333
21	8 0 55.17	1.9867	16 49 59.4	7.678	21	9 33 33.97	1.8862	9 31 2.4	10.374
22	8 2 54.29	1.9839	16 42 16.6	7.748	22	9 35 27.10	1.8849	9 20 38.7	10.416
23	8 4 53.24	1.9811	N.16° 34' 29.6"	7.818	23	9 37 20.16	1.8838	N. 9° 10' 12.5"	10.457
SUNDAY 18.					TUESDAY 20.				
0	8 6 52.02	1.9783	N.16° 26' 38.4"	7.888	0	9 39 13.16	1.8827	N. 8° 59' 43.9"	10.496
1	8 8 50.64	1.9756	16 18 43.0	7.957	1	9 41 6.09	1.8816	8 49 13.0	10.534
2	8 10 49.10	1.9730	16 10 43.5	8.025	2	9 42 58.95	1.8805	8 38 39.8	10.573
3	8 12 47.40	1.9703	16 2 40.0	8.092	3	9 44 51.75	1.8795	8 28 4.2	10.611
4	8 14 45.54	1.9677	15 54 32.5	8.158	4	9 46 44.49	1.8786	8 17 26.4	10.648
5	8 16 43.52	1.9650	15 46 21.0	8.225	5	9 48 37.18	1.8777	8 6 46.4	10.684
6	8 18 41.34	1.9624	15 38 5.5	8.292	6	9 50 29.81	1.8768	7 56 4.3	10.720
7	8 20 39.01	1.9599	15 29 46.0	8.357	7	9 52 22.39	1.8759	7 45 20.0	10.756
8	8 22 36.53	1.9573	15 21 22.7	8.421	8	9 54 14.92	1.8752	7 34 33.6	10.790
9	8 24 33.89	1.9548	15 12 55.5	8.485	9	9 56 7.41	1.8744	7 23 45.2	10.824
10	8 26 31.10	1.9523	15 4 24.5	8.548	10	9 57 59.85	1.8737	7 12 54.7	10.857
11	8 28 28.17	1.9500	14 55 49.7	8.611	11	9 59 52.25	1.8730	7 2 2.3	10.890
12	8 30 25.10	1.9476	14 47 11.2	8.673	12	10 1 44.61	1.8724	6 51 7.9	10.922
13	8 32 21.88	1.9451	14 38 29.0	8.734	13	10 3 36.94	1.8718	6 40 11.6	10.953
14	8 34 18.51	1.9427	14 29 43.1	8.796	14	10 5 29.23	1.8713	6 29 13.5	10.984
15	8 36 15.00	1.9404	14 20 53.5	8.856	15	10 7 21.49	1.8708	6 18 13.5	11.014
16	8 38 11.35	1.9381	14 12 0.4	8.915	16	10 9 13.73	1.8704	6 7 11.8	11.043
17	8 40 7.57	1.9358	14 3 3.7	8.974	17	10 11 5.94	1.8700	5 56 8.3	11.072
18	8 42 3.65	1.9336	13 54 3.5	9.032	18	10 12 58.13	1.8697	5 45 3.1	11.101
19	8 43 59.60	1.9313	13 44 59.8	9.090	19	10 14 50.30	1.8694	5 33 56.2	11.128
20	8 45 55.41	1.9291	13 35 52.7	9.147	20	10 16 42.46	1.8692	5 22 47.7	11.154
21	8 47 51.09	1.9269	13 26 42.2	9.203	21	10 18 34.60	1.8689	5 11 37.7	11.179
22	8 49 46.64	1.9248	13 17 28.3	9.260	22	10 20 26.73	1.8687	5 0 26.2	11.205
23	8 51 42.07	1.9228	13 8 11.0	9.316	23	10 22 18.85	1.8686	4 49 13.1	11.231
24	8 53 37.38	1.9208	N.12° 58' 50.4"	9.370	24	10 24 10.96	1.8685	N. 4° 37' 58.5"	11.255

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 21.					FRIDAY 23.				
0	10 ^h 24 ^m 10.96 ^s	1.8685	N. 4° 37' 58.5"	11.255	0	11 ^h 54 ^m 41.93 ^s	1.9215	S. 4° 36' 21.8"	11.556
1	10 26 3.07	1.8685	4 26 42.5	11.278	1	11 56 37.29	1.9238	4 47 54.8	11.543
2	10 27 55.18	1.8686	4 15 25.2	11.300	2	11 58 32.79	1.9261	4 59 26.9	11.528
3	10 29 47.30	1.8687	4 4 6.5	11.322	3	12 0 28.42	1.9284	5 10 58.1	11.513
4	10 31 39.42	1.8688	3 52 46.5	11.343	4	12 2 24.20	1.9309	5 22 28.4	11.498
5	10 33 31.55	1.8690	3 41 25.3	11.364	5	12 4 20.13	1.9334	5 33 57.8	11.482
6	10 35 23.70	1.8692	3 30 2.8	11.385	6	12 6 16.21	1.9359	5 45 26.2	11.464
7	10 37 15.86	1.8694	3 18 39.1	11.403	7	12 8 12.44	1.9385	5 56 53.5	11.446
8	10 39 8.03	1.8697	3 7 14.4	11.421	8	12 10 8.83	1.9412	6 8 19.7	11.427
9	10 41 0.22	1.8700	2 55 48.6	11.439	9	12 12 5.38	1.9438	6 19 44.8	11.408
10	10 42 52.43	1.8704	2 44 21.7	11.457	10	12 14 2.09	1.9465	6 31 8.7	11.387
11	10 44 44.67	1.8709	2 32 53.8	11.473	11	12 15 58.96	1.9493	6 42 31.3	11.365
12	10 46 36.94	1.8714	2 21 24.9	11.489	12	12 17 55.99	1.9519	6 53 52.5	11.342
13	10 48 29.24	1.8720	2 9 55.1	11.504	13	12 19 53.19	1.9548	7 5 12.4	11.320
14	10 50 21.58	1.8726	1 58 24.4	11.518	14	12 21 50.57	1.9577	7 16 30.9	11.296
15	10 52 13.95	1.8732	1 46 52.9	11.532	15	12 23 48.12	1.9607	7 27 47.9	11.271
16	10 54 6.36	1.8738	1 35 20.6	11.544	16	12 25 45.85	1.9637	7 39 3.4	11.245
17	10 55 58.81	1.8746	1 23 47.6	11.556	17	12 27 43.76	1.9667	7 50 17.3	11.217
18	10 57 51.31	1.8754	1 12 13.9	11.567	18	12 29 41.85	1.9698	8 1 29.5	11.189
19	10 59 43.86	1.8762	1 0 39.5	11.578	19	12 31 40.13	1.9729	8 12 40.0	11.161
20	11 1 36.46	1.8771	0 49 4.5	11.588	20	12 33 38.60	1.9761	8 23 48.8	11.132
21	11 3 29.11	1.8780	0 37 28.9	11.597	21	12 35 37.26	1.9792	8 34 55.8	11.101
22	11 5 21.82	1.8790	0 25 52.8	11.606	22	12 37 36.11	1.9824	8 46 0.9	11.069
23	11 7 14.59	1.8800	N. 0 14 16.2	11.613	23	12 39 35.15	1.9857	S. 8 57 4.1	11.037
THURSDAY 22.					SATURDAY 24.				
0	11 9 7.42	1.8811	N. 0 2 39.2	11.620	0	12 41 34.39	1.9890	S. 9 8 5.4	11.005
1	11 11 0.32	1.8822	S. 0 8 58.2	11.627	1	12 43 33.83	1.9924	9 19 4.7	10.970
2	11 12 53.29	1.8834	0 20 36.0	11.632	2	12 45 33.48	1.9958	9 30 1.8	10.934
3	11 14 46.33	1.8847	0 32 14.1	11.637	3	12 47 33.33	1.9992	9 40 56.7	10.897
4	11 16 39.45	1.8859	0 43 52.5	11.641	4	12 49 33.39	2.0027	9 51 49.4	10.860
5	11 18 32.64	1.8872	0 55 31.0	11.644	5	12 51 33.66	2.0063	10 2 39.9	10.822
6	11 20 25.91	1.8886	1 7 9.7	11.646	6	12 53 34.15	2.0099	10 13 28.1	10.783
7	11 22 19.27	1.8900	1 18 48.5	11.648	7	12 55 34.85	2.0135	10 24 13.9	10.743
8	11 24 12.71	1.8914	1 30 27.4	11.649	8	12 57 35.77	2.0172	10 34 57.3	10.702
9	11 26 6.24	1.8929	1 42 6.4	11.649	9	12 59 36.91	2.0208	10 45 38.2	10.661
10	11 27 59.86	1.8945	1 53 45.3	11.648	10	13 1 38.27	2.0246	10 56 16.6	10.617
11	11 29 53.58	1.8962	2 5 24.2	11.647	11	13 3 39.86	2.0283	11 6 52.3	10.573
12	11 31 47.40	1.8978	2 17 3.0	11.645	12	13 5 41.67	2.0321	11 17 25.4	10.529
13	11 33 41.32	1.8995	2 28 41.6	11.642	13	13 7 43.71	2.0360	11 27 55.8	10.483
14	11 35 35.34	1.9013	2 40 20.0	11.637	14	13 9 45.99	2.0399	11 38 23.4	10.436
15	11 37 29.47	1.9031	2 51 58.1	11.632	15	13 11 48.50	2.0438	11 48 48.1	10.388
16	11 39 23.71	1.9049	3 3 35.9	11.627	16	13 13 51.24	2.0477	11 59 9.9	10.339
17	11 41 18.06	1.9068	3 15 13.4	11.622	17	13 15 54.22	2.0517	12 9 28.8	10.289
18	11 43 12.53	1.9088	3 26 50.5	11.614	18	13 17 57.44	2.0557	12 19 44.6	10.238
19	11 45 7.12	1.9108	3 38 27.1	11.606	19	13 20 0.90	2.0597	12 29 57.3	10.186
20	11 47 1.83	1.9128	3 50 3.2	11.597	20	13 22 4.61	2.0638	12 40 6.9	10.134
21	11 48 56.66	1.9149	4 1 38.8	11.588	21	13 24 8.56	2.0679	12 50 13.4	10.081
22	11 50 51.62	1.9171	4 13 13.8	11.578	22	13 26 12.76	2.0721	13 0 16.6	10.025
23	11 52 46.71	1.9193	4 24 48.1	11.567	23	13 28 17.21	2.0763	13 10 16.4	9.968
24	11 54 41.93	1.9215	S. 4 36 21.8	11.556	24	13 30 21.91	2.0805	S. 13 20 12.8	9.919

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 25.					TUESDAY 27.				
0	13 30 21.91	2.0805	S. 13° 20' 12.8"	9.912	0	15 15 25.02	2.2987	S. 19° 50' 40.6"	5.980
1	13 32 26.87	2.0847	13 30 5.8	9.854	1	15 17 43.07	2.3031	19 56 35.0	5.853
2	13 34 32.08	2.0889	13 39 55.3	9.795	2	15 20 1.39	2.3076	20 2 23.0	5.746
3	13 36 37.54	2.0932	13 49 41.2	9.735	3	15 22 19.98	2.3120	20 8 4.5	5.637
4	13 38 43.26	2.0975	13 59 23.5	9.674	4	15 24 38.83	2.3163	20 13 39.4	5.526
5	13 40 49.24	2.1018	14 9 2.1	9.612	5	15 26 57.93	2.3205	20 19 7.6	5.414
6	13 42 55.48	2.1062	14 18 36.9	9.548	6	15 29 17.29	2.3248	20 24 29.1	5.303
7	13 45 1.99	2.1106	14 28 7.9	9.484	7	15 31 36.91	2.3291	20 29 43.9	5.191
8	13 47 8.76	2.1150	14 37 35.0	9.419	8	15 33 56.78	2.3333	20 34 52.0	5.077
9	13 49 15.79	2.1194	14 46 58.2	9.359	9	15 36 16.90	2.3374	20 39 53.2	4.969
10	13 51 23.09	2.1239	14 56 17.3	9.295	10	15 38 37.27	2.3416	20 44 47.5	4.847
11	13 53 30.66	2.1284	15 5 32.4	9.217	11	15 40 57.89	2.3457	20 49 34.9	4.731
12	13 55 38.50	2.1329	15 14 43.4	9.148	12	15 43 18.75	2.3497	20 54 15.2	4.614
13	13 57 46.61	2.1374	15 23 50.2	9.077	13	15 45 39.85	2.3537	20 58 48.5	4.496
14	13 59 54.99	2.1419	15 32 52.7	9.006	14	15 48 1.19	2.3577	21 3 14.7	4.377
15	14 2 3.64	2.1465	15 41 50.9	8.933	15	15 50 22.77	2.3617	21 7 33.7	4.257
16	14 4 12.57	2.1511	15 50 44.7	8.860	16	15 52 44.59	2.3656	21 11 45.5	4.137
17	14 6 21.77	2.1557	15 59 34.1	8.786	17	15 55 6.63	2.3693	21 15 50.1	4.016
18	14 8 31.25	2.1602	16 8 19.0	8.710	18	15 57 28.90	2.3731	21 19 47.4	3.894
19	14 10 41.00	2.1648	16 16 59.3	8.633	19	15 59 51.40	2.3768	21 23 37.4	3.771
20	14 12 51.03	2.1695	16 25 35.0	8.556	20	16 2 14.12	2.3804	21 27 19.9	3.647
21	14 15 1.34	2.1741	16 34 6.0	8.477	21	16 4 37.05	2.3840	21 30 55.0	3.522
22	14 17 11.93	2.1787	16 42 32.2	8.397	22	16 7 0.90	2.3876	21 34 22.6	3.397
23	14 19 22.79	2.1833	S. 16° 50' 53.6"	8.316	23	16 9 23.56	2.3912	S. 21° 37' 42.7"	3.272
MONDAY 26.					WEDNESDAY 28.				
0	14 21 33.93	2.1880	S. 16° 59' 10.1"	8.334	0	16 11 47.14	2.3947	S. 21° 40' 55.3"	3.147
1	14 23 45.35	2.1927	17 7 21.6	8.151	1	16 14 10.92	2.3980	21 44 0.3	3.019
2	14 25 57.05	2.1974	17 15 28.2	8.067	2	16 16 34.90	2.4012	21 46 57.6	2.890
3	14 28 9.04	2.2021	17 23 29.7	7.982	3	16 18 59.07	2.4045	21 49 47.1	2.761
4	14 30 21.31	2.2067	17 31 26.1	7.897	4	16 21 23.44	2.4077	21 52 28.9	2.639
5	14 32 33.85	2.2113	17 39 17.3	7.809	5	16 23 48.00	2.4109	21 55 3.0	2.503
6	14 34 46.67	2.2160	17 47 3.2	7.721	6	16 26 12.75	2.4140	21 57 29.3	2.379
7	14 36 59.77	2.2207	17 54 43.8	7.632	7	16 28 37.68	2.4170	21 59 47.7	2.241
8	14 39 13.15	2.2254	18 2 19.0	7.542	8	16 31 2.79	2.4199	22 1 58.2	2.109
9	14 41 26.82	2.2301	18 9 48.8	7.451	9	16 33 28.07	2.4227	22 4 0.8	1.977
10	14 43 40.77	2.2347	18 17 13.1	7.358	10	16 35 53.52	2.4256	22 5 55.4	1.844
11	14 45 54.99	2.2393	18 24 31.8	7.264	11	16 38 19.14	2.4283	22 7 42.1	1.711
12	14 48 9.49	2.2440	18 31 44.8	7.169	12	16 40 44.92	2.4310	22 9 20.8	1.578
13	14 50 24.27	2.2487	18 38 52.1	7.074	13	16 43 10.86	2.4336	22 10 51.4	1.443
14	14 52 39.33	2.2533	18 45 53.7	6.979	14	16 45 36.95	2.4362	22 12 13.9	1.308
15	14 54 54.67	2.2579	18 52 49.6	6.882	15	16 48 3.20	2.4387	22 13 28.3	1.173
16	14 57 10.28	2.2625	18 59 39.6	6.783	16	16 50 29.59	2.4410	22 14 34.6	1.037
17	14 59 26.17	2.2671	19 6 23.6	6.683	17	16 52 56.12	2.4432	22 15 32.7	0.900
18	15 1 42.33	2.2717	19 13 1.6	6.583	18	16 55 22.78	2.4455	22 16 22.6	0.763
19	15 3 58.77	2.2762	19 19 33.5	6.482	19	16 57 49.58	2.4477	22 17 4.3	0.627
20	15 6 15.48	2.2807	19 25 59.4	6.380	20	17 0 16.50	2.4497	22 17 37.8	0.489
21	15 8 32.46	2.2852	19 32 19.1	6.277	21	17 2 43.54	2.4517	22 18 3.0	0.351
22	15 10 49.71	2.2897	19 38 32.6	6.172	22	17 5 10.70	2.4537	22 18 19.9	0.212
23	15 13 7.23	2.2942	19 44 39.8	6.067	23	17 7 37.98	2.4556	22 18 28.5	-0.074
24	15 15 25.02	2.2987	S. 19° 50' 40.6"	5.960	24	17 10 5.37	2.4573	S. 22° 18' 28.8"	+0.064

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 29.					FRIDAY 30.				
0	17 10 5.37	2.4573	S. 22° 18' 28.8"	+0.064	0	18 9 22.66	2.4757	S. 21° 36' 32.1"	3.435
1	17 12 32.86	2.4590	22 18 20.8	0.903	1	18 11 51.20	2.4755	21 33 1.8	3.574
2	17 15 0.45	2.4606	22 18 4.4	0.343	2	18 14 19.72	2.4759	21 29 23.2	3.713
3	17 17 28.13	2.4621	22 17 39.6	0.482	3	18 16 48.22	2.4748	21 25 36.2	3.853
4	17 19 55.90	2.4635	22 17 6.5	0.622	4	18 19 16.70	2.4744	21 21 40.8	3.999
5	17 22 23.75	2.4649	22 16 25.0	0.762	5	18 21 45.15	2.4739	21 17 37.1	4.131
6	17 24 51.69	2.4663	22 15 35.0	0.903	6	18 24 13.57	2.4733	21 13 25.1	4.269
7	17 27 19.70	2.4674	22 14 36.6	1.043	7	18 26 41.95	2.4737	21 9 4.8	4.407
8	17 29 47.78	2.4685	22 13 29.8	1.183	8	18 29 10.29	2.4730	21 4 36.2	4.545
9	17 32 15.92	2.4695	22 12 14.6	1.324	9	18 31 38.59	2.4719	20 59 59.4	4.683
10	17 34 44.12	2.4705	22 10 50.9	1.465	10	18 34 6.84	2.4703	20 55 14.4	4.818
11	17 37 12.38	2.4715	22 9 18.8	1.606	11	18 36 35.03	2.4693	20 50 21.2	4.955
12	17 39 40.70	2.4723	22 7 38.2	1.747	12	18 39 3.16	2.4683	20 45 19.8	5.091
13	17 42 9.06	2.4730	22 5 49.2	1.888	13	18 41 31.23	2.4673	20 40 10.3	5.226
14	17 44 37.46	2.4736	22 3 51.7	2.029	14	18 43 59.24	2.4669	20 34 52.7	5.362
15	17 47 5.89	2.4742	22 1 45.7	2.170	15	18 46 27.18	2.4650	20 29 26.9	5.497
16	17 49 34.36	2.4747	21 59 31.3	2.311	16	18 48 55.04	2.4637	20 23 53.1	5.630
17	17 52 2.85	2.4751	21 57 8.4	2.452	17	18 51 22.83	2.4625	20 18 11.3	5.763
18	17 54 31.37	2.4754	21 54 37.1	2.592	18	18 53 50.54	2.4611	20 12 21.5	5.896
19	17 56 59.90	2.4756	21 51 57.3	2.733	19	18 56 18.16	2.4597	20 6 23.7	6.029
20	17 59 28.44	2.4758	21 49 9.1	2.873	20	18 58 45.70	2.4589	20 0 18.0	6.160
21	18 1 57.00	2.4760	21 46 12.5	3.013	21	19 1 13.15	2.4567	19 54 4.5	6.291
22	18 4 25.56	2.4759	21 43 7.5	3.154	22	19 3 40.50	2.4551	19 47 43.1	6.422
23	18 6 54.11	2.4758	21 39 54.0	3.295	23	19 6 7.76	2.4535	19 41 13.9	6.552
24	18 9 22.66	2.4757	S. 21° 36' 32.1"	3.435	24	19 8 34.92	2.4518	S. 19° 34' 36.9"	6.681

PHASES OF THE MOON.

	d	h	m
☾ First Quarter,	1	2	2.3
☾ Full Moon,	7	16	39.5
☾ Last Quarter,	14	20	1.6
☾ New Moon,	22	23	54.6
☾ First Quarter,	30	9	48.5

	d	h
☾ Perigee,	6	7.8
☾ Apogee,	18	11.8

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	SUN W.	88 55 53	2601	90 30 19	2768	92 5 5	2771	93 40 11	2755
	Spica W.	45 53 53	2467	47 35 52	2453	49 18 12	2438	51 0 52	2494
	α Pegasi E.	103 9 6	2609	101 30 23	2593	99 51 18	2577	98 11 51	2561
2	SUN W.	101 40 47	2680	103 17 54	2864	104 55 22	2849	106 33 10	2835
	Spica W.	59 39 23	2351	61 24 8	2337	63 9 13	2323	64 54 39	2309
	Fomalhaut E.	72 2 4	2674	70 29 12	2672	68 56 17	2670	67 23 20	2670
	α Pegasi E.	89 49 20	2487	88 7 49	2473	86 25 58	2460	84 43 48	2447
3	SUN W.	114 47 8	2564	116 26 53	2550	118 6 57	2537	119 47 19	2524
	Spica W.	73 46 58	2240	75 34 26	2227	77 22 13	2214	79 10 20	2201
	Antares W.	28 29 0	2283	30 15 24	2265	32 2 15	2247	33 49 32	2231
	Fomalhaut E.	59 39 24	2200	58 7 5	2213	56 35 3	2200	55 3 22	2250
	α Pegasi E.	76 8 28	2387	74 24 34	2376	72 40 25	2366	70 56 1	2356
4	SUN W.	128 13 27	2466	129 55 28	2456	131 37 43	2447	133 20 11	2438
	Antares W.	42 51 31	2163	44 40 55	2151	46 30 37	2139	48 20 37	2126
	Fomalhaut E.	47 32 55	2118	46 5 7	2189	44 38 21	2200	43 12 47	2300
	α Pegasi E.	62 11 4	2323	60 25 38	2319	58 40 6	2316	56 54 30	2315
5	Antares W.	57 34 27	2083	59 25 53	2075	61 17 30	2068	63 9 18	2062
	α Pegasi E.	48 6 49	2334	46 21 39	2344	44 36 44	2357	42 52 8	2375
	α Arietis E.	90 12 27	2099	88 21 26	2092	86 30 15	2086	84 38 55	2081
	Saturn E.	97 20 52	2079	95 29 21	2073	93 37 40	2066	91 45 49	2061
	Jupiter E.	111 0 7	2022	109 8 40	2075	107 17 2	2069	105 25 15	2063
6	Antares W.	72 30 14	2049	74 22 42	2041	76 15 12	2040	78 7 44	2039
	α Arietis E.	75 20 31	2065	73 28 38	2064	71 36 43	2064	69 44 48	2064
	Saturn E.	82 24 44	2042	80 32 16	2041	78 39 46	2041	76 47 15	2040
	Jupiter E.	96 4 23	2044	94 11 57	2042	92 19 28	2041	90 26 57	2041
7	Antares W.	87 30 13	2048	89 22 33	2052	91 14 46	2057	93 6 52	2062
	α Aquilæ W.	41 8 21	2220	42 34 6	2142	44 1 25	2073	45 30 7	2014
	α Arietis E.	60 25 51	2080	58 34 21	2085	56 42 59	2092	54 51 47	2099
	Saturn E.	67 24 59	2052	65 32 45	2055	63 40 37	2061	61 48 37	2067
	Jupiter E.	81 4 36	2049	79 12 18	2053	77 20 6	2057	75 28 1	2062
	Aldebaran E.	93 23 4	2061	91 31 4	2064	89 39 10	2069	87 47 23	2074
8	α Aquilæ W.	53 9 9	2219	54 43 12	2205	56 17 46	2206	57 52 45	2200
	α Arietis E.	45 39 11	2152	43 49 31	2166	42 0 12	2181	40 11 16	2198
	Saturn E.	52 31 24	2109	50 40 38	2120	48 50 9	2132	46 59 58	2144
	Jupiter E.	66 10 0	2099	64 19 0	2109	62 28 14	2119	60 37 44	2130
	Aldebaran E.	78 30 53	2112	76 40 12	2122	74 49 46	2132	72 59 36	2143
	Mars E.	91 32 30	2253	89 45 21	2263	87 58 26	2272	86 11 46	2283
9	α Aquilæ W.	65 51 42	2222	67 27 53	2222	69 4 4	2224	70 40 12	2228
	Fomalhaut W.	41 11 20	2409	42 33 26	2340	43 56 51	2282	45 21 24	2321
	Saturn E.	37 54 12	2220	36 6 14	2238	34 18 43	2258	32 31 41	2278
	Jupiter E.	51 29 34	2192	49 40 54	2206	47 52 36	2221	46 4 40	2236
	Aldebaran E.	63 53 16	2208	62 5 0	2223	60 17 7	2239	58 29 37	2254
	Mars E.	77 22 40	2346	75 37 48	2361	73 53 17	2375	72 9 7	2391
10	Fomalhaut W.	52 36 24	2076	54 5 3	2058	55 34 4	2045	57 3 21	2034

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV ^h .	P. L. of Diff.	XVIII ^h .	P. L. of Diff.	XXI ^h .	P. L. of Diff.
1	Sun	W.	95 15 38	2740	96 51 25	2735	98 27 32	2710	100 3 50	2694
	Spica	W.	52 43 53	2410	54 27 14	2395	56 10 56	2380	57 54 59	2366
	α Pegasi	E.	96 32 2	2545	94 51 52	2531	93 11 22	2516	91 30 31	2502
2	Sun	W.	108 11 18	2830	109 49 46	2805	111 28 34	2591	113 7 41	2577
	Spica	W.	66 40 26	2294	68 26 34	2281	70 13 2	2267	71 59 50	2253
	Fomalhaut	E.	65 50 23	2273	64 17 28	2276	62 44 38	2262	61 11 56	2250
	α Pegasi	E.	83 1 20	2433	81 18 33	2421	79 35 28	2409	77 52 6	2398
3	Sun	W.	121 27 59	2511	123 8 57	2499	124 50 11	2488	126 31 41	2477
	Spica	W.	80 58 46	2189	82 47 30	2176	84 36 33	2165	86 25 54	2153
	Antares	W.	35 37 13	2216	37 25 16	2202	39 13 41	2188	41 2 26	2175
	Fomalhaut	E.	53 32 6	2273	52 1 20	2201	50 31 9	2034	49 1 38	2073
	α Pegasi	E.	69 11 23	2348	67 26 33	2340	65 41 32	2334	63 56 22	2328
4	Sun	W.	135 2 51	2431	136 45 42	2423	138 28 44	2417	140 11 55	2419
	Antares	W.	50 10 53	2118	52 1 25	2108	53 52 12	2099	55 43 13	2090
	Fomalhaut	E.	41 48 36	2381	40 25 58	2474	39 5 5	2583	37 46 12	2709
	α Pegasi	E.	55 8 52	2315	53 23 14	2317	51 37 39	2321	49 52 10	2326
5	Antares	W.	65 1 15	2057	66 53 20	2053	68 45 32	2049	70 37 50	2045
	α Pegasi	E.	41 7 57	2395	39 24 15	2419	37 41 8	2450	35 58 44	2485
	α Arietis	E.	82 47 26	2076	80 55 50	2072	79 4 8	2069	77 12 21	2067
	Saturn	E.	89 53 49	2056	88 1 42	2052	86 9 28	2048	84 17 8	2045
	Jupiter	E.	103 33 19	2057	101 41 14	2053	99 49 2	2050	97 56 45	2046
6	Antares	W.	80 0 17	2040	81 52 49	2041	83 45 20	2042	85 37 48	2044
	α Arietis	E.	67 52 54	2066	66 1 2	2068	64 9 13	2071	62 17 29	2075
	Saturn	E.	74 54 43	2041	73 2 12	2042	71 9 44	2044	69 17 19	2048
	Jupiter	E.	88 34 26	2041	86 41 55	2042	84 49 26	2043	82 56 59	2046
7	Antares	W.	94 58 50	2068	96 50 39	2075	98 42 17	2083	100 33 43	2091
	α Aquilæ	W.	47 0 2	2263	48 31 1	2218	50 2 57	2280	51 35 42	2247
	α Arietis	E.	53 0 47	2108	51 10 0	2117	49 19 27	2126	47 29 10	2139
	Saturn	E.	59 56 47	2074	58 5 8	2081	56 13 40	2090	54 22 25	2099
	Jupiter	E.	73 36 4	2068	71 44 16	2075	69 52 39	2063	68 1 13	2091
	Aldebaran	E.	85 55 44	2080	84 4 14	2087	82 12 55	2095	80 21 48	2103
8	α Aquilæ	W.	59 28 6	2747	61 3 44	2737	62 39 35	2730	64 15 35	2725
	α Arietis	E.	38 22 45	2216	36 34 41	2235	34 47 6	2256	33 0 2	2280
	Saturn	E.	45 10 6	2157	43 20 34	2171	41 31 23	2186	39 42 35	2203
	Jupiter	E.	58 47 30	2141	56 57 33	2153	55 7 54	2165	53 18 34	2178
	Aldebaran	E.	71 9 43	2155	69 20 7	2167	67 30 50	2180	65 41 53	2194
	Mars	E.	84 25 21	2224	82 39 13	2307	80 53 23	2320	79 7 52	2333
9	α Aquilæ	W.	72 16 15	2733	73 52 11	2739	75 27 59	2747	77 3 37	2756
	Fomalhaut	W.	46 46 56	3188	48 13 19	3152	49 40 26	3121	51 8 10	3096
	Saturn	E.	30 45 9	2300	28 59 10	2324	27 13 46	2350	25 29 0	2380
	Jupiter	E.	44 17 6	2252	42 29 56	2268	40 43 9	2284	38 56 40	2302
	Aldebaran	E.	56 42 30	2271	54 55 48	2288	53 9 31	2306	51 23 40	2324
	Mars	E.	70 25 19	2406	68 41 53	2422	66 58 50	2439	65 16 11	2455
10	Fomalhaut	W.	58 32 51	3027	60 2 30	3023	61 32 14	3021	63 2 1	3020

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	α Pegasi W.	30 55 31	2856	32 28 46	2822	34 2 45	2796	35 37 18	2776
	Jupiter E.	37 10 49	2319	35 25 17	2337	33 40 11	2356	31 55 33	2375
	Aldebaran E.	49 38 15	2342	47 53 17	2362	46 8 47	2382	44 24 46	2402
	Mars E.	63 33 55	2473	61 52 4	2490	60 10 37	2508	58 29 35	2526
	Pollux E.	91 43 47	2365	89 59 22	2382	88 15 22	2400	86 31 47	2417
11	Fomalhaut W.	64 31 49	3022	66 1 35	3026	67 31 16	3030	69 0 52	3036
	α Pegasi W.	43 34 40	2739	45 10 28	2740	46 46 15	2743	48 21 58	2748
	Aldebaran E.	35 52 12	2514	34 11 18	2536	32 30 58	2564	30 51 13	2591
	Mars E.	50 10 45	2619	48 32 16	2638	46 54 13	2657	45 16 36	2676
	Pollux E.	78 0 18	2510	76 19 19	2530	74 38 47	2549	72 58 42	2569
	Venus E.	97 33 6	2843	95 59 34	2863	94 26 28	2884	92 53 49	2905
	SUN E.	135 27 56	2708	133 53 26	2817	132 19 20	2835	130 45 37	2853
12	Fomalhaut W.	76 26 29	3063	77 54 59	3096	79 23 14	3108	80 51 14	3121
	α Pegasi W.	56 18 20	2790	57 53 1	2801	59 27 27	2813	61 1 38	2825
	Mars E.	37 14 51	2772	35 39 46	2790	34 5 5	2809	32 30 49	2827
	Pollux E.	64 45 9	2669	63 7 48	2690	61 30 55	2710	59 54 29	2732
	Venus E.	85 17 1	3006	83 46 56	3026	82 17 16	3047	80 48 1	3066
	SUN E.	123 3 2	2947	121 31 43	2966	120 0 48	2985	118 30 16	3003
13	Fomalhaut W.	88 6 58	3196	89 33 12	3213	90 59 6	3229	92 24 41	3246
	α Pegasi W.	68 48 34	2889	70 21 7	2902	71 53 23	2916	73 25 22	2928
	α Arietis W.	25 11 3	2901	26 43 21	2900	28 15 40	2901	29 47 58	2903
	Saturn W.	18 2 22	2894	19 34 48	2884	21 7 27	2880	22 40 12	2880
	Pollux E.	51 59 12	2836	50 25 31	2858	48 52 18	2880	47 19 33	2901
	Venus E.	73 27 45	3163	72 0 52	3182	70 34 21	3200	69 8 12	3218
	Regulus E.	88 25 56	2748	86 50 20	2765	85 15 6	2782	83 40 14	2798
	SUN E.	111 3 18	3094	109 35 1	3111	108 7 5	3129	106 39 30	3146
14	α Arietis W.	37 27 58	2936	38 59 31	2945	40 30 53	2953	42 2 5	2962
	Saturn W.	30 23 5	2907	31 55 15	2915	33 27 15	2923	34 59 5	2931
	Pollux E.	39 42 56	3019	38 13 7	3044	36 43 49	3070	35 15 3	3096
	Venus E.	62 2 38	3303	60 38 30	3319	59 14 41	3335	57 51 10	3351
	Regulus E.	75 50 57	2873	74 18 3	2887	72 45 27	2900	71 13 8	2914
	SUN E.	99 26 32	3225	98 0 53	3240	96 35 31	3254	95 10 26	3268
15	α Arietis W.	49 35 20	3005	51 5 26	3014	52 35 22	3021	54 5 9	3028
	Saturn W.	42 35 29	2975	44 6 13	2984	45 36 46	2992	47 7 9	3000
	Jupiter W.	28 21 58	2969	29 52 49	2978	31 23 29	2986	32 53 59	2994
	Venus E.	50 57 49	3421	49 35 56	3434	48 14 18	3446	46 52 54	3458
	Regulus E.	63 35 42	2975	62 4 58	2986	60 34 28	2997	59 4 11	3007
	SUN E.	88 8 56	3332	86 45 22	3344	85 22 1	3354	83 58 52	3365
16	α Arietis W.	61 31 48	3063	63 0 43	3069	64 29 31	3073	65 58 13	3079
	Saturn W.	54 36 46	3034	56 6 16	3040	57 35 39	3045	59 4 56	3050
	Jupiter W.	40 24 5	3030	41 53 40	3037	43 23 7	3042	44 52 28	3047
	Aldebaran W.	28 38 7	3118	30 5 55	3117	31 33 44	3116	33 1 34	3116
	Venus E.	40 9 9	3515	38 49 1	3525	37 29 4	3535	36 9 18	3545
	Regulus E.	51 35 52	3054	50 6 46	3062	48 37 50	3069	47 9 3	3077
	SUN E.	77 5 57	3410	75 43 52	3418	74 21 56	3425	73 0 8	3431
17	Saturn W.	66 29 55	3070	67 58 41	3073	69 27 24	3075	70 56 4	3077

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
10	α Pegasi W.	37° 12' 17"	9761	38° 47' 36"	9750	40° 23' 10"	9743	41° 58' 53"	9740
	Jupiter E.	30 11 22	9394	28 27 39	9414	26 44 24	9434	25 1 38	9455
	Aldebaran E.	42 41 14	9423	40 58 12	9444	39 15 40	9467	37 33 40	9489
	Mars E.	56 48 58	9544	55 8 46	9563	53 29 0	9582	51 49 40	9600
	Pollux E.	84 48 37	9436	83 5 53	9454	81 23 35	9479	79 41 43	9498
11	Fomalhaut W.	70 30 20	3043	71 59 39	3058	73 28 48	3081	74 57 45	3079
	α Pegasi W.	49 57 34	9754	51 33 2	9769	53 8 20	9771	54 43 26	9780
	Aldebaran E.	29 12 5	9619	27 33 36	9650	25 55 49	9684	24 18 47	9730
	Mars E.	43 39 24	9695	42 2 38	9714	40 26 17	9733	38 50 21	9753
	Pollux E.	71 19 5	9589	69 39 55	9609	68 1 12	9629	66 22 57	9649
	Venus E.	91 21 36	9925	89 49 49	9945	88 18 27	9965	86 47 31	9986
	Sun E.	129 12 18	9879	127 39 23	9891	126 6 52	9909	124 34 45	9928
12	Fomalhaut W.	82 18 58	3135	83 46 25	3150	85 13 34	3165	86 40 25	3180
	α Pegasi W.	62 35 34	9837	64 9 14	9850	63 42 37	9862	67 15 44	9876
	Mars E.	30 56 56	9845	29 23 27	9864	27 50 22	9882	26 17 40	9899
	Pollux E.	58 18 31	9759	56 43 0	9772	55 7 56	9794	53 33 20	9815
	Venus E.	79 19 10	3086	77 50 43	3105	76 22 40	3125	74 55 1	3144
	Sun E.	117 0 7	3022	115 30 21	3040	114 0 58	3058	112 31 57	3076
13	Fomalhaut W.	93 49 56	3264	95 14 50	3281	96 39 24	3299	98 3 37	3317
	α Pegasi W.	74 57 5	9949	76 28 31	9955	77 59 40	9969	79 30 32	9981
	α Arietis W.	31 20 13	2908	32 52 22	2914	34 24 23	2921	35 56 15	2928
	Saturn W.	24 12 57	2892	25 45 39	2896	27 18 16	2892	28 50 45	2899
	Pollux E.	45 47 16	2994	44 15 27	2946	42 44 7	2969	41 13 16	2994
	Venus E.	67 42 24	3336	66 16 57	3353	64 51 51	3370	63 27 5	3387
	Regulus E.	82 5 43	2814	80 31 33	2828	78 57 42	2843	77 24 10	2858
	Sun E.	105 12 16	3162	103 45 21	3178	102 18 45	3194	100 52 29	3210
14	α Arietis W.	43 33 6	2970	45 3 56	2979	46 34 35	2988	48 5 3	2997
	Saturn W.	36 30 45	2940	38 2 13	2950	39 33 29	2958	41 4 34	2966
	Pollux E.	33 46 51	3129	32 19 16	3161	30 52 20	3195	29 26 5	3233
	Venus E.	56 27 57	3365	55 5 1	3379	53 42 21	3393	52 19 57	3408
	Regulus E.	69 41 7	2927	68 9 22	2939	66 37 53	2952	65 6 40	2964
	Sun E.	93 45 37	3022	92 21 4	3026	90 56 47	3007	89 32 44	3020
15	α Arietis W.	55 34 47	3036	57 4 15	3043	58 33 34	3050	60 2 45	3056
	Saturn W.	48 37 22	3007	50 7 26	3014	51 37 21	3021	53 7 8	3028
	Jupiter W.	34 24 19	3009	35 54 29	3009	37 24 30	3017	38 54 22	3024
	Venus E.	45 31 43	3470	44 10 45	3482	42 50 1	3493	41 29 29	3504
	Regulus E.	57 34 7	3018	56 4 16	3027	54 34 37	3036	53 5 9	3045
	Sun E.	82 35 55	3375	81 13 10	3384	79 50 35	3393	78 28 11	3402
16	α Arietis W.	67 26 48	3084	68 55 17	3088	70 23 41	3091	71 52 1	3095
	Saturn W.	60 34 7	3055	62 3 12	3060	63 32 11	3064	65 1 5	3067
	Jupiter W.	46 21 42	3052	47 50 50	3058	49 19 53	3060	50 48 51	3065
	Aldebaran W.	34 29 24	3116	35 57 14	3116	37 25 4	3116	38 52 54	3117
	Venus E.	34 49 43	3555	33 30 19	3565	32 11 6	3574	30 52 3	3583
	Regulus E.	45 40 25	3085	44 11 57	3092	42 43 38	3099	41 15 27	3105
	Sun E.	71 38 27	3438	70 16 53	3444	68 55 26	3449	67 34 5	3454
17	Saturn W.	72 24 42	3078	73 53 18	3079	75 21 53	3081	76 50 26	3082

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dif.	IIIh.	P. L. of Dif.	VIh.	P. L. of Dif.	IXh.	P. L. of Dif.
17	Jupiter W.	52 17 43	3069	53 46 31	3071	55 15 16	3073	56 43 59	3074
	Aldebaran W.	40 20 43	3117	41 48 32	3118	43 16 20	3117	44 44 9	3118
	Mars W.	22 6 38	3061	23 31 35	3064	24 56 29	3066	26 21 20	3068
	Venus E.	29 33 10	3503	28 14 28	3604	26 55 58	3615	25 37 40	3606
	Regulus E.	39 47 24	3112	38 19 29	3119	36 51 42	3125	35 24 3	3131
	Sun E.	66 12 49	3458	64 51 38	3462	63 30 31	3466	62 9 29	3469
18	Saturn W.	78 18 58	3089	79 47 30	3081	81 16 3	3080	82 44 37	3079
	Jupiter W.	64 7 5	3080	65 35 39	3079	67 4 14	3078	68 32 51	3077
	Aldebaran W.	52 3 15	3114	53 31 7	3113	54 59 1	3111	56 26 57	3109
	Mars W.	33 25 9	3072	34 49 53	3079	36 14 37	3071	37 39 22	3070
	Sun E.	55 25 0	3479	54 4 12	3480	52 43 25	3480	51 22 38	3479
19	Jupiter W.	75 56 21	3068	77 25 12	3064	78 54 6	3060	80 23 4	3056
	Aldebaran W.	63 47 20	3096	65 15 35	3091	66 43 55	3088	68 12 19	3084
	Mars W.	44 43 36	3259	46 8 36	3256	47 33 39	3253	48 58 46	3248
	Pollux W.	23 19 43	3469	24 40 19	3441	26 1 49	3400	27 24 6	3364
	Sun E.	44 38 35	3476	43 17 44	3474	41 56 51	3479	40 35 56	3471
20	Jupiter W.	87 49 11	3034	89 18 41	3039	90 48 18	3023	92 18 2	3018
	Aldebaran W.	75 35 39	3060	77 4 37	3055	78 33 42	3049	80 2 54	3044
	Mars W.	56 5 38	3295	57 31 17	3290	58 57 3	3213	60 22 57	3207
	Pollux W.	34 24 18	3237	35 49 43	3218	37 15 31	3200	38 41 40	3184
	Sun E.	33 50 49	3461	32 29 41	3459	31 8 31	3458	29 47 20	3457
21	Aldebaran W.	87 30 42	3012	89 0 40	3005	90 30 46	2999	92 1 0	2992
	Mars W.	67 34 16	3174	69 0 56	3167	70 27 45	3159	71 54 43	3153
	Pollux W.	45 56 59	3114	47 24 52	3101	48 53 1	3088	50 21 25	3077
	Sun E.	23 1 25	3465	21 40 22	3472	20 19 27	3481	18 58 42	3494
25	Sun W.	23 32 37	3179	24 59 20	3153	26 26 26	3136	27 53 52	3120
	Antares E.	42 11 21	2761	40 36 2	2754	39 0 34	2748	37 24 58	2741
	α Aquilæ E.	95 30 10	3181	94 3 38	3171	92 36 54	3162	91 9 59	3152
26	Sun W.	35 15 35	3051	36 44 45	3039	38 14 10	3036	39 43 50	3015
	Antares E.	29 25 5	2718	27 48 49	2715	26 12 29	2713	24 36 7	2714
	α Aquilæ E.	83 52 49	3115	82 24 58	3110	80 57 1	3105	79 28 58	3101
27	Sun W.	47 15 44	2958	48 46 49	2948	50 18 7	2937	51 49 39	2927
	α Aquilæ E.	72 7 52	3095	70 39 36	3096	69 11 21	3098	67 54 9	3109
	Fomalhaut E.	99 7 43	3074	97 39 2	3062	96 10 6	3050	94 40 55	3039
28	Sun W.	59 30 39	2874	61 3 31	2863	62 36 37	2853	64 9 56	2842
	α Aquilæ E.	60 23 48	3141	58 56 28	3154	57 29 24	3169	56 2 38	3167
	Fomalhaut E.	87 11 52	2993	85 41 31	2987	84 11 2	2981	82 40 25	2974
29	Sun W.	71 59 56	2790	73 34 37	2780	75 9 31	2769	76 44 39	2760
	α Aquilæ E.	48 55 15	3223	47 31 30	3264	46 8 32	3410	44 46 27	3402
	Fomalhaut E.	75 5 53	2959	73 34 49	2959	72 3 45	2960	70 32 42	2963
30	Sun W.	84 43 42	2708	86 20 11	2698	87 56 54	2687	89 33 51	2678
	Fomalhaut E.	62 58 38	2993	61 28 16	3005	59 58 9	3018	58 28 19	3034
	α Pegasi E.	79 38 58	2518	77 58 10	2511	76 17 12	2504	74 36 4	2497

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
17	Jupiter W.	58° 12' 40"	3078	59° 41' 19"	3078	61° 9' 56"	3079	62° 38' 31"	3080
	Aldebaran W.	46 11 57	3118	47 39 45	3117	49 7 34	3116	50 35 24	3115
	Mars W.	27 46 9	3270	29 10 56	3271	30 35 41	3273	32 0 25	3272
	Venus E.	24 19 34	3639	23 1 42	3653	21 44 5	3670	20 26 46	3689
	Regulus E.	33 56 31	3138	32 29 7	3145	31 1 52	3153	29 34 46	3160
	Sun E.	60 48 30	3471	59 27 34	3474	58 6 41	3476	56 45 50	3477
18	Saturn W.	84 13 12	3078	85 41 48	3077	87 10 26	3074	88 39 7	3071
	Jupiter W.	70 1 29	3076	71 30 8	3074	72 58 49	3079	74 27 33	3068
	Aldebaran W.	57 54 56	3106	59 22 58	3105	60 51 2	3103	62 19 9	3099
	Mars W.	39 4 9	3269	40 28 57	3267	41 53 47	3265	43 18 40	3262
	Sun E.	50 1 50	3479	48 41 2	3479	47 20 14	3478	45 59 25	3477
19	Jupiter W.	81 52 7	3052	83 21 15	3048	84 50 28	3043	86 19 47	3039
	Aldebaran W.	69 40 48	3079	71 9 23	3075	72 38 3	3071	74 6 48	3066
	Mars W.	50 23 58	3244	51 49 15	3240	53 14 37	3236	54 40 5	3231
	Pollux W.	28 47 4	3332	30 10 38	3305	31 34 44	3281	32 59 18	3259
	Sun E.	39 14 59	3469	37 54 0	3467	36 32 59	3464	35 11 55	3463
20	Jupiter W.	93 47 53	3011	95 17 52	3005	96 47 58	3000	98 18 11	2993
	Aldebaran W.	81 32 12	3038	83 1 38	3032	84 31 11	3026	86 0 52	3018
	Mars W.	61 48 58	3201	63 15 6	3185	64 41 21	3168	66 7 44	3161
	Pollux W.	40 8 8	3168	41 34 55	3153	43 2 0	3140	44 29 21	3126
	Sun E.	28 26 8	3457	27 4 56	3457	25 43 44	3458	24 22 33	3461
21	Aldebaran W.	93 31 23	2985	95 1 55	2977	96 32 36	2970	98 3 26	2962
	Mars W.	73 21 49	3145	74 49 4	3137	76 16 29	3129	77 44 4	3120
	Pollux W.	51 50 3	3065	53 18 55	3054	54 48 1	3043	56 17 20	3033
	Sun E.	17 38 11	3512	16 18 0	3537	14 58 17	3573	13 39 13	3623
25	Sun W.	29 21 37	3105	30 49 41	3080	32 18 3	3077	33 46 41	3064
	Antares E.	35 49 13	2735	34 13 20	2731	32 37 21	2726	31 1 16	2722
	α Aquilæ E.	89 42 52	3143	88 15 35	3135	86 48 8	3128	85 20 32	3122
26	Sun W.	41 13 44	3003	42 43 53	2992	44 14 16	2981	45 44 53	2969
	Antares E.	22 59 46	2716	21 23 27	2720	19 47 14	2729	18 11 13	2744
	α Aquilæ E.	78 0 50	3099	76 32 39	3086	75 4 25	3065	73 36 9	3094
27	Sun W.	53 21 24	2916	54 53 23	2905	56 25 35	2895	57 58 0	2884
	α Aquilæ E.	66 15 2	3107	64 47 1	3113	63 19 7	3120	61 51 22	3129
	Fomalhaut E.	93 11 31	3029	91 41 54	3018	90 12 4	3009	88 42 3	3001
28	Sun W.	65 43 29	2832	67 17 15	2821	68 51 15	2811	70 25 29	2801
	α Aquilæ E.	54 36 13	3207	53 10 12	3231	51 44 40	3259	50 19 40	3288
	Fomalhaut E.	81 9 40	2969	79 38 49	2966	78 7 54	2963	76 36 55	2961
29	Sun W.	78 20 0	2749	79 55 35	2738	81 31 24	2729	83 7 26	2718
	α Aquilæ E.	43 25 20	3522	42 5 20	3529	40 46 34	3566	39 29 11	3755
	Fomalhaut E.	69 1 42	2965	67 30 46	2969	65 59 55	2976	64 29 12	2983
30	Sun W.	91 11 1	2667	92 48 25	2657	94 26 2	2648	96 3 52	2638
	Fomalhaut E.	56 58 48	3052	55 29 40	3074	54 0 59	3100	52 32 49	3130
	α Pegasi E.	72 54 47	2491	71 13 21	2485	69 31 46	2480	67 50 4	2475

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.			
Sat.	1	^h 12 ^m 30 ^s 58.67	9.062	S. 3° 20' 45.1"	-58.23	16' 1.59"	64.37	10 24.95	0.792
Sun.	2	12 34 36.29	9.073	3 44 1.3	58.13	16 1.87	64.42	10 43.83	0.781
Mon.	3	12 38 14.20	9.086	4 7 14.9	58.01	16 2.15	64.47	11 2.42	0.768
Tues.	4	12 41 52.44	9.101	4 30 25.5	57.87	16 2.42	64.52	11 20.68	0.753
Wed.	5	12 45 31.03	9.116	4 53 32.9	57.72	16 2.71	64.58	11 38.60	0.738
Thur.	6	12 49 9.98	9.131	5 16 36.5	57.57	16 2.99	64.64	11 56.16	0.723
Frid.	7	12 52 49.33	9.148	5 39 36.2	57.40	16 3.27	64.70	12 13.32	0.706
Sat.	8	12 56 29.09	9.166	6 2 31.6	57.21	16 3.55	64.76	12 30.06	0.688
Sun.	9	13 0 9.29	9.185	6 25 22.2	57.01	16 3.82	64.83	12 46.37	0.669
Mon.	10	13 3 49.95	9.205	6 48 7.7	56.79	16 4.10	64.90	13 2.22	0.649
Tues.	11	13 7 31.10	9.225	7 10 47.8	56.55	16 4.37	64.97	13 17.57	0.629
Wed.	12	13 11 12.76	9.247	7 33 22.1	56.31	16 4.64	65.03	13 32.42	0.607
Thur.	13	13 14 54.94	9.269	7 55 50.5	56.04	16 4.91	65.11	13 46.75	0.585
Frid.	14	13 18 37.67	9.292	8 18 12.3	55.76	16 5.18	65.19	14 0.55	0.562
Sat.	15	13 22 20.97	9.316	8 40 27.1	55.47	16 5.45	65.27	14 13.77	0.538
Sun.	16	13 26 4.85	9.340	9 2 34.7	55.15	16 5.72	65.36	14 26.40	0.514
Mon.	17	13 29 49.34	9.364	9 24 34.6	54.82	16 5.99	65.45	14 38.43	0.488
Tues.	18	13 33 34.45	9.392	9 46 26.4	54.49	16 6.26	65.54	14 49.84	0.462
Wed.	19	13 37 20.20	9.419	10 8 9.6	54.12	16 6.52	65.63	15 0.61	0.435
Thur.	20	13 41 6.59	9.446	10 29 44.0	53.74	16 6.79	65.72	15 10.74	0.408
Frid.	21	13 44 53.66	9.474	10 51 9.2	53.35	16 7.05	65.82	15 20.22	0.380
Sat.	22	13 48 41.40	9.502	11 12 24.8	52.93	16 7.32	65.92	15 29.01	0.352
Sun.	23	13 52 29.82	9.532	11 33 30.1	52.50	16 7.58	66.02	15 37.11	0.323
Mon.	24	13 56 18.93	9.562	11 54 24.9	52.05	16 7.85	66.12	15 44.53	0.293
Tues.	25	14 0 8.76	9.592	12 15 8.8	51.58	16 8.11	66.23	15 51.24	0.263
Wed.	26	14 3 59.30	9.622	12 35 41.2	51.11	16 8.38	66.33	15 57.24	0.233
Thur.	27	14 7 50.56	9.652	12 56 2.0	50.60	16 8.64	66.44	16 2.52	0.204
Frid.	28	14 11 42.56	9.682	13 16 10.6	50.09	16 8.90	66.55	16 7.06	0.173
Sat.	29	14 15 35.30	9.713	13 36 6.5	49.56	16 9.16	66.66	16 10.85	0.142
Sun.	30	14 19 28.81	9.745	13 55 49.4	49.01	16 9.42	66.77	16 13.89	0.110
Mon.	31	14 23 23.09	9.777	14 15 19.1	48.44	16 9.68	66.89	16 16.16	0.078
Tues.	32	14 27 18.13	9.810	S. 14 34 34.8	-47.86	16 9.95	67.00	16 17.66	0.045

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sidereal Time.

— prefixed to the hourly change of declination indicates that the south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be added to Mean Time.	Diff. for 1 hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
Sat.	1	^h 12 ^m 31 ^s 0.25	9.064	S. 3° 20' 55.2"	-58.24	^m 10 ^s 25.08	0.792	^h 12 ^m 41 ^s 25.33
Sun.	2	12 34 37.92	9.075	3 44 11.7	58.14	10 43.97	0.781	12 45 21.89
Mon.	3	12 38 15.88	9.088	4 7 25.6	58.02	11 2.56	0.768	12 49 18.44
Tues.	4	12 41 54.17	9.103	4 30 36.5	57.88	11 20.82	0.753	12 53 14.99
Wed.	5	12 45 32.80	9.118	4 53 44.1	57.73	11 38.74	0.738	12 57 11.54
Thur.	6	12 49 11.80	9.133	5 16 48.0	57.58	11 56.30	0.723	13 1 8.10
Frid.	7	12 52 51.19	9.150	5 39 47.9	57.41	12 13.46	0.706	13 5 4.65
Sat.	8	12 56 31.00	9.168	6 2 43.5	57.22	12 30.20	0.688	13 9 1.20
Sun.	9	13 0 11.24	9.187	6 25 34.3	57.02	12 46.51	0.669	13 12 57.75
Mon.	10	13 3 51.95	9.207	6 48 20.1	56.80	13 2.36	0.649	13 16 54.31
Tues.	11	13 7 33.15	9.227	7 11 0.4	56.56	13 17.71	0.629	13 20 50.86
Wed.	12	13 11 14.85	9.249	7 33 34.9	56.32	13 32.56	0.607	13 24 47.41
Thur.	13	13 14 57.07	9.271	7 56 3.4	56.05	13 46.89	0.585	13 28 43.96
Frid.	14	13 18 39.84	9.294	8 18 25.4	55.77	14 0.68	0.562	13 32 40.52
Sat.	15	13 22 23.18	9.318	8 40 40.3	55.48	14 13.90	0.538	13 36 37.07
Sun.	16	13 26 7.10	9.342	9 2 48.0	55.16	14 26.53	0.514	13 40 33.63
Mon.	17	13 29 51.63	9.368	9 24 48.0	54.83	14 38.55	0.488	13 44 30.18
Tues.	18	13 33 36.77	9.394	9 46 39.9	54.49	14 49.96	0.462	13 48 26.73
Wed.	19	13 37 22.55	9.421	10 8 23.2	54.12	15 0.73	0.435	13 52 23.28
Thur.	20	13 41 8.98	9.448	10 29 57.7	53.74	15 10.85	0.408	13 56 19.83
Frid.	21	13 44 56.08	9.476	10 51 22.9	53.35	15 20.31	0.380	14 0 16.39
Sat.	22	13 48 43.85	9.504	11 12 38.5	52.93	15 29.10	0.352	14 4 12.95
Sun.	23	13 52 32.30	9.533	11 33 43.8	52.50	15 37.20	0.323	14 8 9.50
Mon.	24	13 56 21.44	9.563	11 54 38.6	52.05	15 44.61	0.293	14 12 6.05
Tues.	25	14 0 11.30	9.593	12 15 22.4	51.58	15 51.31	0.263	14 16 2.60
Wed.	26	14 4 1.86	9.623	12 35 54.8	51.11	15 57.30	0.233	14 19 59.16
Thur.	27	14 7 53.14	9.652	12 56 15.5	50.60	16 2.57	0.204	14 23 55.71
Frid.	28	14 11 45.16	9.683	13 16 24.0	50.09	16 7.11	0.173	14 27 52.27
Sat.	29	14 15 37.93	9.714	13 36 19.8	49.56	16 10.89	0.142	14 31 48.82
Sun.	30	14 19 31.46	9.746	13 56 2.6	49.01	16 13.92	0.110	14 35 45.38
Mon.	31	14 23 25.75	9.778	14 15 32.2	48.44	16 16.18	0.078	14 39 41.93
Tues.	32	14 27 20.80	9.811	S. 14 34 47.8	-47.86	16 17.68	0.045	14 43 38.48

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

— prefixed to the hourly change of declination indicates that the south declinations are increasing.

Diff. for 1 hour,

+ 0.8565.

(Table III.)

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal $^{\circ}$.	
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ'						
1	274	188° 26' 42.2	25' 48.2	147.69	+0.38	0.0001868	-53.3	^h 11 ^m 16 ^s 43.49	
2	275	189 25 47.5	24 53.4	147.77	0.48	0.0000590	53.3	11 12 47.59	
3	276	190 24 54.7	24 0.5	147.84	0.55	9.9999313	53.2	11 8 51.68	
4	277	191 24 3.8	23 9.5	147.91	0.60	.9998037	53.0	11 4 55.77	
5	278	192 23 14.7	22 20.3	147.99	0.62	.9996769	52.8	11 0 59.86	
6	279	193 22 27.4	21 32.9	148.07	0.59	.9995505	52.6	10 57 3.97	
7	280	194 21 42.0	20 47.5	148.15	0.53	.9994247	52.3	10 53 8.06	
8	281	195 20 58.7	20 4.1	148.24	0.47	.9992996	52.0	10 49 12.15	
9	282	196 20 17.5	19 22.8	148.33	0.38	.9991753	51.7	10 45 16.24	
10	283	197 19 38.4	18 43.6	148.41	0.26	.9990516	51.3	10 41 20.34	
11	284	198 19 1.4	18 6.5	148.50	0.14	.9989287	51.0	10 37 24.43	
12	285	199 18 26.7	17 31.7	148.59	+0.02	.9988065	50.8	10 33 28.52	
13	286	200 17 54.2	16 59.1	148.69	-0.10	.9986849	50.5	10 29 32.61	
14	287	201 17 24.1	16 28.8	148.79	0.23	.9985640	50.3	10 25 36.71	
15	288	202 16 56.2	16 0.9	148.89	0.33	.9984435	50.1	10 21 40.80	
16	289	203 16 30.7	15 35.3	148.99	0.42	.9983233	49.9	10 17 44.89	
17	290	204 16 7.5	15 12.0	149.08	0.47	.9982035	49.8	10 13 48.98	
18	291	205 15 46.6	14 51.0	149.18	0.47	.9980839	49.7	10 9 53.08	
19	292	206 15 27.9	14 32.2	149.27	0.47	.9979644	49.7	10 5 57.17	
20	293	207 15 11.4	14 15.6	149.36	0.43	.9978450	49.7	10 2 1.26	
21	294	208 14 57.1	14 1.2	149.44	0.38	.9977256	49.7	9 58 5.35	
22	295	209 14 44.8	13 48.8	149.53	0.28	.9976064	49.7	9 54 9.45	
23	296	210 14 34.5	13 38.4	149.61	0.18	.9974872	49.6	9 50 13.54	
24	297	211 14 26.1	13 29.9	149.69	-0.05	.9973681	49.6	9 46 17.63	
25	298	212 14 19.6	13 23.3	149.77	+0.09	.9972492	49.5	9 42 21.72	
26	299	213 14 14.9	13 18.5	149.84	0.22	.9971306	49.4	9 38 25.82	
27	300	214 14 11.9	13 15.4	149.91	0.35	.9970123	49.2	9 34 29.91	
28	301	215 14 10.6	13 13.9	149.98	0.48	.9968944	48.9	9 30 34.00	
29	302	216 14 10.8	13 14.0	150.04	0.59	.9967772	48.6	9 26 38.09	
30	303	217 14 12.7	13 15.8	150.11	0.66	.9966609	48.2	9 22 42.19	
31	304	218 14 16.3	13 19.2	150.18	0.71	.9965457	47.7	9 18 46.28	
32	305	219 14 21.4	13 24.2	150.25	+0.72	9.9964316	-47.2	9 14 50.37	
NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0 ^h .0.								Diff. for 1 hour, — 0 ^h .8296. (Table II.)	

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.

	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
							h m	m	
1	16 9.3	16 13.0	59 10.9	+1.17	59 24.5	+1.07	6 42.5	2.36	8.0
2	16 16.4	16 19.3	59 36.8	0.95	59 47.5	0.81	7 38.5	2.30	9.0
3	16 21.7	16 23.4	59 56.3	0.63	60 2.8	+0.43	8 32.9	2.24	10.0
4	16 24.5	16 24.7	60 6.6	+0.19	60 7.5	-0.06	9 25.9	2.19	11.0
5	16 24.1	16 22.6	60 5.3	-0.32	59 59.7	0.59	10 18.1	2.16	12.0
6	16 20.2	16 17.0	59 51.0	0.86	59 39.1	1.11	11 10.0	2.17	13.0
7	16 13.0	16 8.1	59 24.3	1.35	59 6.6	1.57	12 2.3	2.19	14.0
8	16 2.7	15 56.8	58 46.7	1.74	58 24.9	1.88	12 55.3	2.22	15.0
9	15 50.5	15 43.9	58 1.7	1.97	57 37.6	2.02	13 49.0	2.24	16.0
10	15 37.3	15 30.7	57 13.2	2.02	56 49.0	1.99	14 42.7	2.23	17.0
11	15 24.2	15 18.1	56 25.3	1.92	56 2.7	1.82	15 35.7	2.18	18.0
12	15 12.3	15 7.0	55 41.5	1.69	55 22.1	1.53	16 27.3	2.10	19.0
13	15 2.3	14 58.2	55 4.8	1.34	54 49.8	1.15	17 16.8	2.01	20.0
14	14 54.8	14 52.0	54 37.1	0.95	54 27.0	0.73	18 4.0	1.92	21.0
15	14 50.0	14 48.6	54 19.4	0.52	54 14.5	-0.30	18 49.1	1.84	22.0
16	14 48.0	14 48.0	54 12.1	-0.09	54 12.3	+0.12	19 32.5	1.78	23.0
17	14 48.7	14 50.1	54 14.9	+0.32	54 20.0	0.51	20 14.9	1.75	24.0
18	14 52.1	14 54.6	54 27.2	0.69	54 36.4	0.85	20 57.0	1.76	25.0
19	14 57.6	15 1.1	54 47.5	0.99	55 0.2	1.12	21 39.6	1.80	26.0
20	15 4.9	15 9.0	55 14.3	1.22	55 29.4	1.29	22 23.6	1.87	27.0
21	15 13.3	15 17.8	55 45.3	1.35	56 1.8	1.39	23 9.7	1.98	28.0
22	15 22.4	15 27.0	56 18.6	1.40	56 35.4	1.39	23 58.6	2.11	29.0
23	15 31.5	15 35.9	56 52.0	1.36	57 8.1	1.32	0		0.4
24	15 40.1	15 44.2	57 23.7	1.26	57 38.5	1.19	0 50.7	2.24	1.4
25	15 47.9	15 51.5	57 52.4	1.11	58 5.3	1.03	1 45.7	2.35	2.4
26	15 54.7	15 57.7	58 17.2	0.95	58 28.1	0.86	2 42.8	2.41	3.4
27	16 0.3	16 2.7	58 37.9	0.77	58 46.7	0.68	3 40.7	2.41	4.4
28	16 4.8	16 6.7	58 54.4	0.60	59 1.2	0.52	4 38.0	2.36	5.4
29	16 8.3	16 9.6	59 7.0	0.44	59 11.8	0.35	5 33.7	2.28	6.4
30	16 10.6	16 11.3	59 15.5	0.26	59 18.0	+0.16	6 27.4	2.19	7.4
31	16 11.6	16 11.6	59 19.3	+0.05	59 19.3	-0.06	7 19.3	2.13	8.4
32	16 11.2	16 10.4	59 17.8	-0.19	59 14.7	-0.34	8 10.0	2.10	9.4

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 1.					MONDAY 3.				
0	19 8 34.92	2.4518	S. 19° 34' 36.9"	6.661	0	21 3 42.42	2.3395	S. 12° 2' 11.5"	11.759
1	19 11 1.98	2.4501	19 27 52.2	6.809	1	21 6 2.71	2.3379	11 50 23.6	11.837
2	19 13 28.93	2.4483	19 20 59.8	6.937	2	21 8 22.88	2.3348	11 38 31.1	11.913
3	19 15 55.77	2.4464	19 13 59.8	7.063	3	21 10 42.90	2.3394	11 26 34.1	11.987
4	19 18 22.50	2.4446	19 6 52.2	7.189	4	21 13 2.77	2.3300	11 14 32.7	12.060
5	19 20 49.12	2.4427	18 59 37.1	7.315	5	21 15 22.50	2.3277	11 2 26.9	12.132
6	19 23 15.62	2.4407	18 52 14.4	7.441	6	21 17 42.09	2.3253	10 50 16.9	12.202
7	19 25 42.00	2.4387	18 44 44.2	7.564	7	21 20 1.54	2.3231	10 38 2.7	12.271
8	19 28 8.26	2.4367	18 37 6.7	7.686	8	21 22 20.86	2.3208	10 25 44.4	12.338
9	19 30 34.40	2.4346	18 29 21.9	7.808	9	21 24 40.04	2.3186	10 13 22.1	12.405
10	19 33 0.41	2.4324	18 21 29.8	7.929	10	21 26 59.09	2.3164	10 0 55.8	12.470
11	19 35 26.29	2.4302	18 13 30.4	8.050	11	21 29 18.01	2.3142	9 48 25.7	12.532
12	19 37 52.04	2.4281	18 5 23.8	8.169	12	21 31 36.80	2.3121	9 35 51.9	12.594
13	19 40 17.66	2.4258	17 57 10.1	8.288	13	21 33 55.46	2.3099	9 23 14.4	12.655
14	19 42 43.14	2.4236	17 48 49.3	8.406	14	21 36 13.99	2.3078	9 10 33.3	12.714
15	19 45 8.49	2.4213	17 40 21.4	8.522	15	21 38 32.40	2.3056	8 57 48.7	12.779
16	19 47 33.70	2.4190	17 31 46.6	8.638	16	21 40 50.69	2.3038	8 45 0.7	12.838
17	19 49 58.77	2.4167	17 23 4.8	8.753	17	21 43 8.86	2.3017	8 32 9.3	12.893
18	19 52 23.71	2.4144	17 14 16.2	8.867	18	21 45 26.90	2.2997	8 19 14.7	12.937
19	19 54 48.50	2.4120	17 5 20.8	8.980	19	21 47 44.83	2.2978	8 6 16.9	12.988
20	19 57 13.15	2.4096	16 56 18.6	9.092	20	21 50 2.64	2.2959	7 53 16.1	13.037
21	19 59 37.65	2.4073	16 47 9.8	9.202	21	21 52 20.34	2.2941	7 40 12.4	13.086
22	20 2 2.01	2.4047	16 37 54.3	9.312	22	21 54 37.93	2.2922	7 27 5.8	13.134
23	20 4 26.22	2.4023	S. 16° 28' 32.3"	9.421	23	21 56 55.41	2.2904	S. 7° 13' 56.3"	13.181
SUNDAY 2.					TUESDAY 4.				
0	20 6 50.28	2.3997	S. 16° 19' 3.8"	9.528	0	21 59 12.78	2.2887	S. 7° 0' 44.1"	13.225
1	20 9 14.19	2.3979	16 9 28.9	9.635	1	22 1 30.05	2.2870	6 47 29.3	13.267
2	20 11 37.95	2.3948	15 59 47.6	9.741	2	22 3 47.22	2.2853	6 34 12.0	13.309
3	20 14 1.57	2.3923	15 50 0.0	9.845	3	22 6 4.29	2.2837	6 20 52.2	13.349
4	20 16 25.03	2.3897	15 40 6.2	9.948	4	22 8 21.26	2.2820	6 7 30.1	13.388
5	20 18 48.34	2.3879	15 30 6.3	10.050	5	22 10 38.13	2.2804	5 54 5.7	13.425
6	20 21 11.50	2.3847	15 20 0.2	10.152	6	22 12 54.91	2.2789	5 40 39.1	13.460
7	20 23 34.51	2.3822	15 9 48.1	10.251	7	22 15 11.60	2.2774	5 27 10.5	13.493
8	20 25 57.37	2.3797	14 59 30.1	10.349	8	22 17 28.20	2.2760	5 13 39.9	13.526
9	20 28 20.07	2.3771	14 49 6.2	10.447	9	22 19 44.72	2.2747	5 0 7.4	13.557
10	20 30 42.62	2.3746	14 38 36.5	10.543	10	22 22 1.16	2.2733	4 46 33.1	13.586
11	20 33 5.02	2.3720	14 28 1.0	10.638	11	22 24 17.52	2.2719	4 32 57.1	13.614
12	20 35 27.26	2.3694	14 17 19.9	10.732	12	22 26 33.79	2.2705	4 19 19.4	13.641
13	20 37 49.35	2.3669	14 6 33.2	10.825	13	22 28 49.98	2.2693	4 5 40.2	13.666
14	20 40 11.29	2.3644	13 55 40.9	10.917	14	22 31 6.11	2.2680	3 51 59.5	13.689
15	20 42 33.08	2.3619	13 44 43.2	11.006	15	22 33 22.17	2.2671	3 38 17.5	13.711
16	20 44 54.72	2.3594	13 33 40.2	11.095	16	22 35 38.16	2.2659	3 24 34.2	13.731
17	20 47 16.21	2.3568	13 22 31.8	11.183	17	22 37 54.08	2.2648	3 10 49.8	13.749
18	20 49 37.54	2.3542	13 11 18.2	11.269	18	22 40 9.94	2.2638	2 57 4.3	13.767
19	20 51 58.72	2.3518	12 59 59.5	11.354	19	22 42 25.74	2.2628	2 43 17.8	13.783
20	20 54 19.76	2.3494	12 48 35.7	11.438	20	22 44 41.48	2.2618	2 29 30.4	13.797
21	20 56 40.67	2.3469	12 37 6.9	11.521	21	22 46 57.16	2.2609	2 15 42.2	13.809
22	20 59 1.39	2.3444	12 25 33.2	11.602	22	22 49 12.79	2.2601	2 1 53.3	13.820
23	21 1 21.98	2.3419	12 13 54.7	11.681	23	22 51 28.37	2.2592	1 48 3.8	13.829
24	21 3 42.42	2.3395	S. 12° 2' 11.5"	11.759	24	22 53 43.90	2.2585	S. 1° 34' 13.8"	13.837

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 5.					FRIDAY 7.				
0	22 53 43.90	2.9585	S. 1° 34' 13.8"	13.837	0	0 42 1.40	2.9675	N. 9° 10' 27.8"	12.409
1	22 55 59.39	2.9578	1 20 23.3	13.844	1	0 44 17.48	2.9685	9 22 53.6	12.398
2	22 58 14.84	2.9571	1 6 32.5	13.849	2	0 46 33.62	2.9694	9 35 15.5	12.333
3	23 0 30.24	2.9564	0 52 41.4	13.852	3	0 48 49.81	2.9703	9 47 33.5	12.267
4	23 2 45.61	2.9558	0 38 50.2	13.854	4	0 51 6.06	2.9713	9 59 47.5	12.199
5	23 5 0.94	2.9553	0 24 58.9	13.855	5	0 53 22.37	2.9724	10 11 57.4	12.131
6	23 7 16.24	2.9547	S. 0 11 7.6	13.854	6	0 55 38.75	2.9735	10 24 3.2	12.069
7	23 9 31.51	2.9542	N. 0 2 43.6	13.852	7	0 57 55.19	2.9745	10 36 4.8	11.991
8	23 11 46.75	2.9538	0 16 34.6	13.847	8	1 0 11.69	2.9756	10 48 2.1	11.917
9	23 14 1.97	2.9535	0 30 25.2	13.840	9	1 2 28.26	2.9767	10 59 54.9	11.843
10	23 16 17.17	2.9532	0 44 15.4	13.833	10	1 4 44.89	2.9777	11 11 43.3	11.769
11	23 18 32.35	2.9528	0 58 5.2	13.825	11	1 7 1.59	2.9788	11 23 27.2	11.693
12	23 20 47.51	2.9526	1 11 54.4	13.814	12	1 9 18.35	2.9799	11 35 6.5	11.616
13	23 23 2.66	2.9524	1 25 42.9	13.802	13	1 11 35.18	2.9811	11 46 41.1	11.537
14	23 25 17.80	2.9522	1 39 30.7	13.789	14	1 13 52.08	2.9822	11 58 11.0	11.458
15	23 27 32.92	2.9520	1 53 17.6	13.774	15	1 16 9.05	2.9834	12 9 36.1	11.377
16	23 29 48.04	2.9519	2 7 3.6	13.758	16	1 18 26.09	2.9845	12 20 56.3	11.296
17	23 32 3.15	2.9518	2 20 48.6	13.740	17	1 20 43.19	2.9856	12 32 11.6	11.213
18	23 34 18.26	2.9518	2 34 32.4	13.720	18	1 23 0.36	2.9867	12 43 21.9	11.129
19	23 36 33.37	2.9519	3 48 15.0	13.699	19	1 25 17.60	2.9879	12 54 27.1	11.044
20	23 38 48.49	2.9520	3 1 56.3	13.677	20	1 27 34.91	2.9891	13 5 27.2	10.957
21	23 41 3.61	2.9521	3 15 36.2	13.653	21	1 29 52.29	2.9902	13 16 22.0	10.870
22	23 43 18.74	2.9522	3 29 14.6	13.628	22	1 32 9.74	2.9914	13 27 11.6	10.782
23	23 45 33.88	2.9523	N. 3 42 51.5	13.601	23	1 34 27.26	2.9926	N.13 37 55.9	10.692
THURSDAY 6.					SATURDAY 8.				
0	23 47 49.02	2.9525	N. 3 56 26.7	13.572	0	1 36 44.85	2.9937	N.13 48 34.7	10.601
1	23 50 4.18	2.9528	4 10 0.1	13.542	1	1 39 2.51	2.9948	13 59 8.0	10.509
2	23 52 19.36	2.9532	4 23 31.7	13.511	2	1 41 20.23	2.9959	14 9 35.8	10.417
3	23 54 34.56	2.9535	4 37 1.4	13.478	3	1 43 38.02	2.9971	14 19 58.1	10.325
4	23 56 49.78	2.9538	4 50 29.1	13.444	4	1 45 55.88	2.9982	14 30 14.8	10.231
5	23 59 5.02	2.9542	5 3 54.7	13.408	5	1 48 13.81	2.9993	14 40 25.8	10.135
6	0 1 20.28	2.9546	5 17 18.1	13.371	6	1 50 31.80	2.3004	14 50 31.0	10.038
7	0 3 35.57	2.9551	5 30 39.2	13.333	7	1 52 49.86	2.3015	15 0 30.4	9.941
8	0 5 50.89	2.9556	5 43 58.0	13.292	8	1 55 7.98	2.3026	15 10 23.9	9.842
9	0 8 6.24	2.9561	5 57 14.3	13.251	9	1 57 26.17	2.3037	15 20 11.5	9.743
10	0 10 21.62	2.9567	6 10 28.1	13.208	10	1 59 44.42	2.3047	15 29 53.1	9.643
11	0 12 37.04	2.9572	6 23 39.3	13.163	11	2 2 2.73	2.3057	15 39 28.7	9.542
12	0 14 52.49	2.9578	6 36 47.7	13.117	12	2 4 21.10	2.3067	15 48 58.1	9.439
13	0 17 7.98	2.9585	6 49 53.3	13.070	13	2 6 39.53	2.3077	15 58 21.4	9.337
14	0 19 23.51	2.9592	7 2 56.1	13.022	14	2 8 58.02	2.3087	16 7 38.6	9.234
15	0 21 39.09	2.9600	7 15 56.0	12.973	15	2 11 16.58	2.3097	16 16 49.5	9.129
16	0 23 54.71	2.9607	7 28 52.8	12.921	16	2 13 35.19	2.3107	16 25 54.1	9.024
17	0 26 10.37	2.9614	7 41 46.5	12.868	17	2 15 53.86	2.3117	16 34 52.4	8.919
18	0 28 26.08	2.9622	7 54 36.9	12.813	18	2 18 12.59	2.3126	16 43 44.4	8.812
19	0 30 41.84	2.9631	8 7 24.0	12.758	19	2 20 31.37	2.3134	16 52 30.0	8.705
20	0 32 57.65	2.9638	8 20 7.8	12.702	20	2 22 50.20	2.3142	17 1 9.0	8.596
21	0 35 13.50	2.9647	8 32 48.2	12.643	21	2 25 9.07	2.3149	17 9 41.5	8.487
22	0 37 29.41	2.9657	8 45 25.0	12.583	22	2 27 27.99	2.3157	17 18 7.5	8.378
23	0 39 45.38	2.9666	8 57 58.2	12.523	23	2 29 46.96	2.3166	17 26 26.9	8.268
24	0 42 1.40	2.9675	N. 9 10 27.8	12.462	24	2 32 5.98	2.3173	N.17 34 39.6	8.157

GREENWICH MEAN TIME

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 9.					TUESDAY 11.				
0	2 32 5.98	2.3173	N.17 34 39.6	8.157	0	4 23 24.98	2.3025	N.21 49 46.6	2.361
1	2 34 25.04	2.3180	17 42 45.7	8.045	1	4 25 43.08	2.3008	21 52 5.8	2.953
2	2 36 44.14	2.3187	17 50 45.0	7.932	2	4 28 1.09	2.2993	21 54 17.6	2.135
3	2 39 3.28	2.3193	17 58 37.6	7.820	3	4 30 19.00	2.2977	21 56 22.0	2.012
4	2 41 22.46	2.3199	18 6 23.4	7.707	4	4 32 36.81	2.2959	21 58 19.1	1.890
5	2 43 41.67	2.3205	18 14 2.4	7.592	5	4 34 54.51	2.2941	22 0 8.8	1.768
6	2 46 0.92	2.3211	18 21 34.5	7.477	6	4 37 12.10	2.2922	22 1 51.2	1.646
7	2 48 20.20	2.3216	18 28 59.7	7.362	7	4 39 29.58	2.2904	22 3 26.3	1.524
8	2 50 39.51	2.3221	18 36 18.0	7.247	8	4 41 46.95	2.2885	22 4 54.1	1.403
9	2 52 58.85	2.3225	18 43 29.4	7.131	9	4 44 4.20	2.2865	22 6 14.6	1.282
10	2 55 18.21	2.3228	18 50 33.8	7.014	10	4 46 21.33	2.2845	22 7 27.9	1.161
11	2 57 37.59	2.3232	18 57 31.1	6.897	11	4 48 38.34	2.2824	22 8 33.9	1.040
12	2 59 56.99	2.3235	19 4 21.4	6.780	12	4 50 55.22	2.2803	22 9 32.7	0.920
13	3 2 16.41	2.3237	19 11 4.7	6.662	13	4 53 11.97	2.2781	22 10 24.3	0.800
14	3 4 35.84	2.3240	19 17 40.9	6.543	14	4 55 28.59	2.2758	22 11 8.7	0.680
15	3 6 55.29	2.3242	19 24 9.9	6.423	15	4 57 45.07	2.2736	22 11 45.9	0.561
16	3 9 14.74	2.3243	19 30 31.7	6.304	16	5 0 1.42	2.2713	22 12 16.0	0.442
17	3 11 34.20	2.3244	19 36 46.4	6.185	17	5 2 17.63	2.2689	22 12 38.9	0.323
18	3 13 53.67	2.3245	19 42 53.9	6.065	18	5 4 33.69	2.2665	22 12 54.7	0.204
19	3 16 13.14	2.3245	19 48 54.2	5.944	19	5 6 49.61	2.2641	22 13 3.4	+0.087
20	3 18 32.61	2.3244	19 54 47.2	5.823	20	5 9 5.38	2.2615	22 13 5.1	-0.031
21	3 20 52.07	2.3243	20 0 33.0	5.702	21	5 11 20.99	2.2589	22 12 59.7	0.148
22	3 23 11.53	2.3242	20 6 11.5	5.581	22	5 13 36.45	2.2563	22 12 47.3	0.264
23	3 25 30.98	2.3240	N.20 11 42.7	5.460	23	5 15 51.75	2.2537	N.22 12 28.0	0.380
MONDAY 10.					WEDNESDAY 12.				
0	3 27 50.41	2.3237	N.20 17 6.7	5.338	0	5 18 6.90	2.2511	N.22 12 1.7	0.496
1	3 30 9.83	2.3235	20 22 23.3	5.216	1	5 20 21.88	2.2483	22 11 28.5	0.612
2	3 32 29.23	2.3232	20 27 32.6	5.093	2	5 22 36.69	2.2455	22 10 48.3	0.737
3	3 34 48.61	2.3228	20 32 34.5	4.971	3	5 24 51.34	2.2427	22 10 1.2	0.862
4	3 37 7.96	2.3223	20 37 29.1	4.848	4	5 27 5.82	2.2399	22 9 7.3	0.986
5	3 39 27.28	2.3218	20 42 16.3	4.726	5	5 29 20.13	2.2370	22 8 6.5	1.070
6	3 41 46.58	2.3213	20 46 56.2	4.603	6	5 31 34.26	2.2340	22 6 58.9	1.183
7	3 44 5.84	2.3207	20 51 28.7	4.480	7	5 33 48.21	2.2311	22 5 44.6	1.295
8	3 46 25.06	2.3201	20 55 53.8	4.356	8	5 36 1.99	2.2282	22 4 23.5	1.407
9	3 48 44.25	2.3194	21 0 11.5	4.232	9	5 38 15.59	2.2251	22 2 55.7	1.519
10	3 51 3.39	2.3186	21 4 21.7	4.108	10	5 40 29.00	2.2220	22 1 21.2	1.630
11	3 53 22.48	2.3177	21 8 24.5	3.985	11	5 42 42.23	2.2190	21 59 40.1	1.740
12	3 55 41.52	2.3169	21 12 19.9	3.862	12	5 44 55.28	2.2159	21 57 52.4	1.850
13	3 58 0.51	2.3160	21 16 7.9	3.738	13	5 47 8.14	2.2127	21 55 58.1	1.960
14	4 0 19.44	2.3150	21 19 48.5	3.615	14	5 49 20.80	2.2094	21 53 57.2	2.069
15	4 2 38.31	2.3140	21 23 21.7	3.491	15	5 51 33.27	2.2062	21 51 49.8	2.177
16	4 4 57.12	2.3130	21 26 47.4	3.367	16	5 53 45.55	2.2030	21 49 35.9	2.285
17	4 7 15.87	2.3119	21 30 5.7	3.243	17	5 55 57.63	2.1997	21 47 15.6	2.393
18	4 9 34.55	2.3107	21 33 16.6	3.120	18	5 58 9.51	2.1964	21 44 48.8	2.500
19	4 11 53.15	2.3094	21 36 20.1	2.997	19	6 0 21.20	2.1931	21 42 15.6	2.606
20	4 14 11.68	2.3082	21 39 16.2	2.873	20	6 2 32.68	2.1897	21 39 36.1	2.711
21	4 16 30.13	2.3068	21 42 4.9	2.750	21	6 4 43.96	2.1863	21 36 50.3	2.816
22	4 18 48.50	2.3054	21 44 46.2	2.627	22	6 6 55.04	2.1830	21 33 58.2	2.920
23	4 21 6.78	2.3040	21 47 20.1	2.504	23	6 9 5.92	2.1796	21 30 59.9	3.024
24	4 23 24.98	2.3025	N.21 49 46.6	2.381	24	6 11 16.59	2.1761	N.21 27 55.3	3.137

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 13.					SATURDAY 15.				
0	6 11 16.59	2.1761	N.21° 27' 55.3"	3.127	0	7 51 36.98	2.0063	N.17° 10' 52.4"	7.334
1	6 13 27.05	2.1796	21 24 44.6	3.230	1	7 53 37.26	2.0031	17 3 30.2	7.405
2	6 15 37.30	2.1692	21 21 27.7	3.332	2	7 55 37.35	1.9998	16 56 3.8	7.476
3	6 17 47.15	2.1657	21 18 4.7	3.434	3	7 57 37.24	1.9966	16 48 33.1	7.547
4	6 19 57.19	2.1622	21 14 35.6	3.535	4	7 59 36.94	1.9934	16 40 58.2	7.616
5	6 22 6.81	2.1586	21 11 0.5	3.635	5	8 1 36.45	1.9903	16 33 19.2	7.685
6	6 24 16.22	2.1551	21 7 19.4	3.735	6	8 3 35.78	1.9872	16 25 36.0	7.754
7	6 26 25.42	2.1515	21 3 32.3	3.834	7	8 5 34.92	1.9841	16 17 48.7	7.822
8	6 28 34.40	2.1479	20 59 39.3	3.932	8	8 7 33.87	1.9810	16 9 57.4	7.889
9	6 30 43.17	2.1443	20 55 40.5	4.029	9	8 9 32.64	1.9780	16 2 2.0	7.956
10	6 32 51.72	2.1408	20 51 35.8	4.126	10	8 11 31.23	1.9750	15 54 2.6	8.022
11	6 35 0.06	2.1372	20 47 25.3	4.222	11	8 13 29.64	1.9721	15 45 59.3	8.087
12	6 37 8.18	2.1335	20 43 9.1	4.318	12	8 15 27.88	1.9692	15 37 52.1	8.152
13	6 39 16.08	2.1299	20 38 47.1	4.414	13	8 17 25.94	1.9662	15 29 41.0	8.217
14	6 41 23.77	2.1263	20 34 19.4	4.508	14	8 19 23.83	1.9633	15 21 26.1	8.280
15	6 43 31.24	2.1227	20 29 46.1	4.602	15	8 21 21.54	1.9604	15 13 7.4	8.343
16	6 45 38.49	2.1191	20 25 7.2	4.695	16	8 23 19.08	1.9576	15 4 44.9	8.406
17	6 47 45.53	2.1155	20 20 22.7	4.788	17	8 25 16.46	1.9549	14 56 18.7	8.467
18	6 49 52.35	2.1118	20 15 32.6	4.881	18	8 27 13.67	1.9521	14 47 48.9	8.528
19	6 51 58.95	2.1082	20 10 37.0	4.972	19	8 29 10.71	1.9494	14 39 15.4	8.588
20	6 54 5.33	2.1045	20 5 36.0	5.062	20	8 31 7.60	1.9468	14 30 38.3	8.648
21	6 56 11.49	2.1008	20 0 29.6	5.152	21	8 33 4.33	1.9442	14 21 57.6	8.708
22	6 58 17.43	2.0972	19 55 17.8	5.241	22	8 35 0.90	1.9416	14 13 13.3	8.767
23	7 0 23.16	2.0937	N.19 50 0.7	5.330	23	8 36 57.32	1.9390	N.14 4 25.6	8.824
FRIDAY 14.					SUNDAY 16.				
0	7 2 28.67	2.0900	N.19 44 38.2	5.418	0	8 38 53.58	1.9364	N.13 55 34.4	8.881
1	7 4 33.96	2.0863	19 39 10.5	5.505	1	8 40 49.69	1.9340	13 46 32.8	8.938
2	7 6 39.04	2.0827	19 33 37.6	5.592	2	8 42 45.66	1.9316	13 37 41.8	8.995
3	7 8 43.89	2.0791	19 27 59.5	5.678	3	8 44 41.48	1.9292	13 28 40.4	9.051
4	7 10 48.53	2.0756	19 22 16.2	5.763	4	8 46 37.16	1.9268	13 19 35.7	9.106
5	7 12 52.96	2.0720	19 16 27.9	5.848	5	8 48 32.70	1.9245	13 10 27.7	9.160
6	7 14 57.17	2.0683	19 10 34.5	5.932	6	8 50 28.10	1.9222	13 1 16.5	9.213
7	7 17 1.16	2.0647	19 4 36.1	6.015	7	8 52 23.36	1.9199	12 52 2.1	9.267
8	7 19 4.94	2.0612	18 58 32.7	6.098	8	8 54 18.49	1.9177	12 42 44.5	9.320
9	7 21 8.51	2.0577	18 52 24.3	6.181	9	8 56 13.49	1.9156	12 33 23.7	9.372
10	7 23 11.86	2.0541	18 46 11.0	6.262	10	8 58 8.36	1.9135	12 23 59.8	9.423
11	7 25 15.00	2.0506	18 39 52.9	6.342	11	9 0 3.11	1.9114	12 14 32.9	9.474
12	7 27 17.93	2.0471	18 33 30.0	6.422	12	9 1 57.73	1.9093	12 5 2.9	9.525
13	7 29 20.65	2.0436	18 27 2.3	6.502	13	9 3 52.23	1.9073	11 55 29.9	9.574
14	7 31 23.16	2.0401	18 20 29.8	6.581	14	9 5 46.61	1.9054	11 45 54.0	9.623
15	7 33 25.46	2.0367	18 13 52.6	6.658	15	9 7 40.88	1.9035	11 36 15.1	9.672
16	7 35 27.56	2.0332	18 7 10.8	6.736	16	9 9 35.03	1.9017	11 26 33.3	9.720
17	7 37 29.45	2.0297	18 0 24.3	6.813	17	9 11 29.08	1.8999	11 16 48.7	9.767
18	7 39 31.13	2.0263	17 53 33.2	6.889	18	9 13 23.02	1.8982	11 7 1.3	9.813
19	7 41 32.61	2.0230	17 46 37.6	6.964	19	9 15 16.86	1.8964	10 57 11.1	9.860
20	7 43 33.89	2.0196	17 39 37.5	7.039	20	9 17 10.59	1.8947	10 47 18.1	9.906
21	7 45 34.96	2.0162	17 32 32.9	7.114	21	9 19 4.22	1.8931	10 37 22.4	9.951
22	7 47 35.83	2.0128	17 25 23.8	7.188	22	9 20 57.76	1.8915	10 27 24.0	9.995
23	7 49 36.50	2.0096	17 18 10.3	7.262	23	9 22 51.20	1.8899	10 17 23.0	10.039
24	7 51 36.98	2.0063	N.17 10 52.4	7.334	24	9 24 44.55	1.8884	N.10 7 19.3	10.082

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 17.					WEDNESDAY 19.				
0	9 24 44.55	1.8884	N. 10 7 19.3	10.082	0	10 54 36.60	1.8758	N. 1 24 52.4	11.452
1	9 26 37.81	1.8870	9 57 13.1	10.125	1	10 56 29.18	1.8768	1 13 24.9	11.464
2	9 28 30.99	1.8857	9 47 4.3	10.167	2	10 58 21.82	1.8779	1 1 56.7	11.477
3	9 30 24.09	1.8843	9 36 53.0	10.208	3	11 0 14.53	1.8791	0 50 27.7	11.489
4	9 32 17.11	1.8830	9 26 39.3	10.248	4	11 2 7.31	1.8803	0 38 58.0	11.500
5	9 34 10.05	1.8817	9 16 23.2	10.289	5	11 4 0.16	1.8815	0 27 27.7	11.510
6	9 36 2.91	1.8805	9 6 4.6	10.330	6	11 5 53.09	1.8828	0 15 56.8	11.520
7	9 37 55.71	1.8794	8 55 43.6	10.368	7	11 7 46.10	1.8842	N. 0 4 25.3	11.529
8	9 39 48.44	1.8783	8 45 20.4	10.406	8	11 9 39.19	1.8855	S. 0 7 6.7	11.537
9	9 41 41.10	1.8772	8 34 54.9	10.444	9	11 11 32.36	1.8869	0 18 39.1	11.544
10	9 43 33.70	1.8762	8 24 27.1	10.482	10	11 13 25.62	1.8885	0 30 12.0	11.551
11	9 45 26.24	1.8752	8 13 57.1	10.519	11	11 15 18.98	1.8902	0 41 45.2	11.557
12	9 47 18.72	1.8743	8 3 24.8	10.556	12	11 17 12.44	1.8918	0 53 18.8	11.562
13	9 49 11.15	1.8734	7 52 50.4	10.591	13	11 19 5.99	1.8934	1 4 52.7	11.567
14	9 51 3.53	1.8726	7 42 13.9	10.625	14	11 20 59.64	1.8951	1 16 26.8	11.570
15	9 52 55.86	1.8719	7 31 35.4	10.659	15	11 22 53.40	1.8968	1 28 1.1	11.573
16	9 54 48.15	1.8712	7 20 54.8	10.693	16	11 24 47.26	1.8987	1 39 35.6	11.576
17	9 56 40.40	1.8705	7 10 12.2	10.727	17	11 26 41.24	1.9006	1 51 10.2	11.577
18	9 58 32.61	1.8699	6 59 27.6	10.760	18	11 28 35.33	1.9025	2 2 44.9	11.578
19	10 0 24.79	1.8693	6 48 41.0	10.792	19	11 30 29.54	1.9045	2 14 19.6	11.578
20	10 2 16.93	1.8687	6 37 52.5	10.823	20	11 32 23.87	1.9065	2 25 54.3	11.577
21	10 4 9.04	1.8683	6 27 2.2	10.853	21	11 34 18.32	1.9086	2 37 28.9	11.576
22	10 6 1.13	1.8680	6 16 10.1	10.883	22	11 36 12.90	1.9108	2 49 3.4	11.574
23	10 7 53.20	1.8676	N. 6 5 16.2	10.913	23	11 38 7.62	1.9131	S. 3 0 37.7	11.571
TUESDAY 18.					THURSDAY 20.				
0	10 9 45.24	1.8673	N. 5 54 20.5	10.942	0	11 40 2.47	1.9153	S. 3 12 11.9	11.567
1	10 11 37.27	1.8671	5 43 23.1	10.971	1	11 41 57.45	1.9176	3 23 45.8	11.569
2	10 13 29.29	1.8668	5 32 24.0	10.999	2	11 43 52.58	1.9200	3 35 19.4	11.557
3	10 15 21.29	1.8667	5 21 23.2	11.026	3	11 45 47.85	1.9223	3 46 52.6	11.550
4	10 17 13.29	1.8666	5 10 20.8	11.052	4	11 47 43.26	1.9247	3 58 25.4	11.543
5	10 19 5.28	1.8665	4 59 16.9	11.078	5	11 49 38.82	1.9273	4 9 57.8	11.536
6	10 20 57.27	1.8665	4 48 11.4	11.104	6	11 51 34.54	1.9299	4 21 29.7	11.527
7	10 22 49.26	1.8666	4 37 4.4	11.128	7	11 53 30.41	1.9325	4 33 1.0	11.517
8	10 24 41.26	1.8667	4 25 56.0	11.152	8	11 55 26.44	1.9352	4 44 31.7	11.507
9	10 26 33.27	1.8669	4 14 46.1	11.176	9	11 57 22.64	1.9380	4 56 1.8	11.496
10	10 28 25.29	1.8672	4 3 34.8	11.199	10	11 59 19.00	1.9408	5 7 31.2	11.484
11	10 30 17.33	1.8674	3 52 22.2	11.222	11	12 1 15.53	1.9436	5 18 59.8	11.471
12	10 32 9.38	1.8677	3 41 8.2	11.244	12	12 3 12.23	1.9465	5 30 27.7	11.457
13	10 34 1.45	1.8681	3 29 52.9	11.264	13	12 5 9.11	1.9494	5 41 54.7	11.442
14	10 35 53.55	1.8686	3 18 36.5	11.283	14	12 7 6.16	1.9523	5 53 20.8	11.427
15	10 37 45.68	1.8691	3 7 18.9	11.303	15	12 9 3.39	1.9554	6 4 45.9	11.410
16	10 39 37.84	1.8696	2 56 0.1	11.323	16	12 11 0.81	1.9585	6 16 10.0	11.392
17	10 41 30.03	1.8702	2 44 40.2	11.342	17	12 12 58.41	1.9616	6 27 33.0	11.374
18	10 43 22.26	1.8708	2 33 19.1	11.360	18	12 14 56.20	1.9648	6 38 54.9	11.356
19	10 45 14.53	1.8715	2 21 57.0	11.377	19	12 16 54.19	1.9681	6 50 15.7	11.336
20	10 47 6.84	1.8723	2 10 33.9	11.393	20	12 18 52.37	1.9714	7 1 35.2	11.314
21	10 48 59.20	1.8731	1 59 9.9	11.408	21	12 20 50.75	1.9747	7 12 53.4	11.292
22	10 50 51.61	1.8740	1 47 44.9	11.423	22	12 22 49.33	1.9780	7 24 10.3	11.270
23	10 52 44.08	1.8749	1 36 19.1	11.438	23	12 24 48.11	1.9814	7 35 25.8	11.246
24	10 54 36.60	1.8758	N. 1 24 52.4	11.452	24	12 26 47.10	1.9849	S. 7 46 39.8	11.221

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 21.					SUNDAY 23.				
0	12 26 47.10	1.9849	S. 7 46 39.8	11.921	0	14 6 49.59	2.1955	S. 15 57 35.1	8.819
1	12 28 46.30	1.9884	7 57 52.3	11.196	1	14 9 1.47	2.2004	16 6 21.9	8.742
2	12 30 45.71	1.9920	8 9 3.3	11.170	2	14 11 13.64	2.2053	16 15 4.1	8.663
3	12 32 45.34	1.9957	8 20 12.7	11.149	3	14 13 26.11	2.2103	16 23 41.5	8.583
4	12 34 45.19	1.9993	8 31 20.4	11.113	4	14 15 38.88	2.2153	16 32 14.0	8.502
5	12 36 45.26	2.0030	8 42 26.3	11.083	5	14 17 51.95	2.2203	16 40 41.7	8.421
6	12 38 45.55	2.0067	8 53 30.4	11.053	6	14 20 5.32	2.2253	16 49 4.5	8.338
7	12 40 46.06	2.0105	9 4 32.7	11.022	7	14 22 18.99	2.2302	16 57 22.3	8.253
8	12 42 46.81	2.0144	9 15 33.0	10.989	8	14 24 32.95	2.2352	17 5 34.9	8.167
9	12 44 47.79	2.0183	9 26 31.4	10.956	9	14 26 47.21	2.2402	17 13 42.3	8.080
10	12 46 49.00	2.0222	9 37 27.8	10.922	10	14 29 1.77	2.2452	17 21 44.5	7.993
11	12 48 50.45	2.0262	9 48 22.0	10.886	11	14 31 16.63	2.2501	17 29 41.5	7.905
12	12 50 52.14	2.0302	9 59 14.1	10.850	12	14 33 31.78	2.2550	17 37 33.1	7.814
13	12 52 54.07	2.0342	10 10 4.0	10.812	13	14 35 47.23	2.2599	17 45 19.2	7.733
14	12 54 56.24	2.0383	10 20 51.6	10.774	14	14 38 2.97	2.2648	17 52 59.9	7.632
15	12 56 58.66	2.0424	10 31 36.9	10.734	15	14 40 19.01	2.2697	18 0 35.0	7.538
16	12 59 1.33	2.0466	10 42 19.7	10.693	16	14 42 35.34	2.2747	18 8 4.4	7.443
17	13 1 4.25	2.0508	10 53 0.1	10.652	17	14 44 51.97	2.2796	18 15 28.2	7.348
18	13 3 7.42	2.0550	11 3 38.0	10.610	18	14 47 8.89	2.2844	18 22 46.2	7.251
19	13 5 10.85	2.0592	11 14 13.3	10.566	19	14 49 26.10	2.2892	18 29 58.3	7.153
20	13 7 14.53	2.0635	11 24 45.9	10.521	20	14 51 43.60	2.2940	18 37 4.6	7.055
21	13 9 18.47	2.0679	11 35 15.8	10.475	21	14 54 1.38	2.2987	18 44 4.9	6.954
22	13 11 22.68	2.0723	11 45 42.9	10.428	22	14 56 19.45	2.3035	18 50 59.1	6.853
23	13 13 27.15	2.0767	S. 11 56 7.2	10.381	23	14 58 37.80	2.3082	S. 18 57 47.2	6.751
SATURDAY 22.					MONDAY 24.				
0	13 15 31.88	2.0811	S. 12 6 28.6	10.332	0	15 0 56.44	2.3130	S. 19 4 29.2	6.648
1	13 17 36.88	2.0856	12 16 47.0	10.282	1	15 3 15.36	2.3177	19 11 4.9	6.543
2	13 19 42.15	2.0902	12 27 2.4	10.230	2	15 5 34.56	2.3223	19 17 34.3	6.438
3	13 21 47.70	2.0947	12 37 14.6	10.177	3	15 7 54.04	2.3269	19 23 57.4	6.332
4	13 23 53.52	2.0992	12 47 23.6	10.124	4	15 10 13.79	2.3314	19 30 14.1	6.224
5	13 25 59.61	2.1038	12 57 29.4	10.070	5	15 12 33.81	2.3360	19 36 24.3	6.115
6	13 28 5.98	2.1085	13 7 32.0	10.015	6	15 14 54.11	2.3406	19 42 27.9	6.005
7	13 30 12.63	2.1132	13 17 31.2	9.957	7	15 17 14.68	2.3450	19 48 24.9	5.895
8	13 32 19.56	2.1178	13 27 26.9	9.899	8	15 19 35.51	2.3493	19 54 15.3	5.783
9	13 34 26.77	2.1225	13 37 19.1	9.840	9	15 21 56.60	2.3537	19 59 58.9	5.670
10	13 36 34.26	2.1272	13 47 7.7	9.780	10	15 24 17.95	2.3580	20 5 35.7	5.557
11	13 38 42.04	2.1320	13 56 52.7	9.719	11	15 26 39.56	2.3623	20 11 5.7	5.442
12	13 40 50.10	2.1368	14 6 34.0	9.657	12	15 29 1.43	2.3666	20 16 28.7	5.326
13	13 42 58.45	2.1416	14 16 11.5	9.593	13	15 31 23.55	2.3708	20 21 44.8	5.210
14	13 45 7.09	2.1464	14 25 45.1	9.528	14	15 33 45.92	2.3749	20 26 53.9	5.092
15	13 47 16.02	2.1512	14 35 14.9	9.463	15	15 36 8.54	2.3790	20 31 55.9	4.974
16	13 49 25.24	2.1561	14 44 40.7	9.396	16	15 38 31.40	2.3830	20 36 50.8	4.855
17	13 51 34.75	2.1610	14 54 2.4	9.327	17	15 40 54.50	2.3869	20 41 38.5	4.734
18	13 53 44.56	2.1659	15 3 20.0	9.258	18	15 43 17.83	2.3908	20 46 18.9	4.613
19	13 55 54.66	2.1708	15 12 33.4	9.187	19	15 45 41.40	2.3946	20 50 52.0	4.491
20	13 58 5.05	2.1757	15 21 42.5	9.116	20	15 48 5.19	2.3984	20 55 17.8	4.368
21	14 0 15.74	2.1807	15 30 47.3	9.043	21	15 50 29.21	2.4022	20 59 36.2	4.245
22	14 2 26.73	2.1856	15 39 47.7	8.970	22	15 52 53.45	2.4059	21 3 47.2	4.121
23	14 4 38.01	2.1905	15 48 43.7	8.895	23	15 55 17.91	2.4095	21 7 50.7	3.995
24	14 6 49.59	2.1955	S. 15 57 35.1	8.819	24	15 57 42.59	2.4130	S. 21 11 46.6	3.868

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 25.					THURSDAY 27.				
0	15 57 42.59	2.4130	S. 21° 11' 46.6"	3.868	0	17 56 3.95	2.4845	S. 21° 41' 43.2"	2.732
1	16 0 7.47	2.4164	21 15 34.9	3.748	1	17 58 33.00	2.4838	21 38 55.1	2.871
2	16 2 32.56	2.4198	21 19 15.6	3.615	2	18 1 2.01	2.4831	21 35 58.7	3.010
3	16 4 57.85	2.4232	21 22 48.7	3.487	3	18 3 30.97	2.4822	21 32 53.9	3.149
4	16 7 23.34	2.4264	21 26 14.0	3.357	4	18 5 59.88	2.4812	21 29 40.8	3.288
5	16 9 49.02	2.4296	21 29 31.5	3.227	5	18 8 28.72	2.4802	21 26 19.3	3.427
6	16 12 14.89	2.4327	21 32 41.2	3.096	6	18 10 57.50	2.4791	21 22 49.5	3.566
7	16 14 40.95	2.4357	21 35 43.0	2.964	7	18 13 26.21	2.4779	21 19 11.4	3.703
8	16 17 7.18	2.4386	21 38 36.9	2.833	8	18 15 54.85	2.4767	21 15 25.1	3.840
9	16 19 33.58	2.4414	21 41 23.0	2.701	9	18 18 23.41	2.4753	21 11 30.6	3.977
10	16 22 0.15	2.4442	21 44 1.1	2.568	10	18 20 51.89	2.4739	21 7 27.9	4.113
11	16 24 26.89	2.4470	21 46 31.2	2.434	11	18 23 20.28	2.4724	21 3 17.0	4.249
12	16 26 53.79	2.4497	21 48 53.2	2.300	12	18 25 48.58	2.4708	20 58 58.0	4.384
13	16 29 20.85	2.4522	21 51 7.2	2.165	13	18 28 16.78	2.4692	20 54 30.9	4.519
14	16 31 48.05	2.4546	21 53 13.0	2.029	14	18 30 44.88	2.4675	20 49 55.7	4.654
15	16 34 15.40	2.4570	21 55 10.7	1.894	15	18 33 12.88	2.4657	20 45 12.4	4.788
16	16 36 42.89	2.4592	21 57 0.3	1.758	16	18 35 40.77	2.4638	20 40 21.1	4.921
17	16 39 10.51	2.4614	21 58 41.7	1.621	17	18 38 8.54	2.4619	20 35 21.9	5.053
18	16 41 38.26	2.4635	22 0 14.8	1.483	18	18 40 36.20	2.4600	20 30 14.7	5.186
19	16 44 6.13	2.4655	22 1 39.7	1.346	19	18 43 3.74	2.4579	20 24 59.6	5.317
20	16 46 34.12	2.4675	22 2 56.3	1.208	20	18 45 31.15	2.4558	20 19 36.7	5.447
21	16 49 2.23	2.4694	22 4 4.6	1.069	21	18 47 58.43	2.4536	20 14 6.0	5.577
22	16 51 30.45	2.4712	22 5 4.6	0.930	22	18 50 25.58	2.4513	20 8 27.5	5.707
23	16 53 58.77	2.4728	S. 22° 5' 56.2"	0.791	23	18 52 52.59	2.4491	S. 20° 2' 41.2"	5.836
WEDNESDAY 26.					FRIDAY 28.				
0	16 56 27.19	2.4744	S. 22° 6' 39.5"	0.652	0	18 55 19.47	2.4467	S. 19° 56' 47.2"	5.963
1	16 58 55.70	2.4758	22 7 14.4	0.519	1	18 57 46.20	2.4443	19 50 45.6	6.090
2	17 1 24.29	2.4773	22 7 40.9	0.379	2	19 0 12.79	2.4419	19 44 36.4	6.217
3	17 3 52.97	2.4786	22 7 59.0	0.231	3	19 2 39.23	2.4394	19 38 19.6	6.342
4	17 6 21.72	2.4797	22 8 8.6	-0.090	4	19 5 5.52	2.4369	19 31 55.3	6.467
5	17 8 50.54	2.4808	22 8 9.8	+0.050	5	19 7 31.66	2.4343	19 25 23.5	6.591
6	17 11 19.42	2.4818	22 8 2.6	0.191	6	19 9 57.64	2.4317	19 18 44.4	6.714
7	17 13 48.36	2.4828	22 7 46.9	0.332	7	19 12 23.46	2.4290	19 11 57.9	6.837
8	17 16 17.36	2.4836	22 7 22.8	0.473	8	19 14 49.12	2.4263	19 5 4.0	6.958
9	17 18 46.40	2.4843	22 6 50.2	0.614	9	19 17 14.61	2.4234	18 58 2.9	7.078
10	17 21 15.48	2.4850	22 6 9.1	0.756	10	19 19 39.93	2.4206	18 50 54.6	7.198
11	17 23 44.60	2.4856	22 5 19.5	0.897	11	19 22 5.08	2.4178	18 43 39.1	7.317
12	17 26 13.75	2.4860	22 4 21.4	1.039	12	19 24 30.07	2.4150	18 36 16.5	7.435
13	17 28 42.92	2.4864	22 3 14.8	1.181	13	19 26 54.88	2.4120	18 28 46.9	7.552
14	17 31 12.12	2.4867	22 1 59.7	1.322	14	19 29 19.51	2.4091	18 21 10.3	7.668
15	17 33 41.33	2.4869	22 0 36.2	1.463	15	19 31 43.97	2.4063	18 13 26.7	7.783
16	17 36 10.55	2.4870	21 59 4.2	1.604	16	19 34 8.25	2.4031	18 5 36.3	7.897
17	17 38 39.77	2.4870	21 57 23.7	1.746	17	19 36 32.34	2.4000	17 57 39.1	8.010
18	17 41 8.99	2.4869	21 55 34.7	1.887	18	19 38 56.25	2.3970	17 49 35.1	8.122
19	17 43 38.20	2.4867	21 53 37.2	2.028	19	19 41 19.98	2.3939	17 41 24.5	8.233
20	17 46 7.40	2.4865	21 51 31.3	2.169	20	19 43 43.52	2.3908	17 33 7.2	8.343
21	17 48 36.58	2.4861	21 49 16.9	2.310	21	19 46 6.88	2.3877	17 24 43.3	8.452
22	17 51 5.73	2.4857	21 46 54.1	2.450	22	19 48 30.05	2.3846	17 16 12.9	8.560
23	17 53 34.86	2.4852	21 44 22.9	2.591	23	19 50 53.03	2.3815	17 7 36.1	8.668
24	17 56 3.95	2.4845	S. 21° 41' 43.2"	2.732	24	19 53 15.83	2.3784	S. 16° 58' 52.8"	8.774

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 29.					MONDAY 31.				
0	19 53 15.83	2.3784	S. 16 58 52.8	8.774	0	21 43 51.92	2.3282	S. 8 17 28.8	12.487
1	19 55 33.44	2.3759	16 50 3.2	8.878	1	21 46 6.14	2.3260	8 4 58.2	12.533
2	19 58 0.85	2.3719	16 41 7.4	8.982	2	21 48 20.24	2.3239	7 52 24.8	12.579
3	20 0 23.07	2.3687	16 32 5.4	9.084	3	21 50 34.21	2.3218	7 39 48.7	12.623
4	20 2 45.10	2.3655	16 22 57.3	9.186	4	21 52 48.05	2.3297	7 27 10.0	12.667
5	20 5 6.93	2.3623	16 13 43.1	9.287	5	21 55 1.77	2.3277	7 14 28.7	12.708
6	20 7 28.57	2.3591	16 4 22.8	9.387	6	21 57 15.38	2.3258	7 1 45.0	12.748
7	20 9 50.02	2.3558	15 54 56.6	9.485	7	21 59 28.87	2.3239	6 48 58.9	12.788
8	20 12 11.27	2.3526	15 45 24.6	9.582	8	22 1 42.25	2.3221	6 36 10.5	12.826
9	20 14 32.33	2.3494	15 35 46.8	9.678	9	22 3 55.52	2.3202	6 23 19.8	12.863
10	20 16 53.20	2.3462	15 26 3.3	9.773	10	22 6 8.68	2.3184	6 10 26.9	12.898
11	20 19 13.88	2.3430	15 16 14.1	9.867	11	22 8 21.73	2.3167	5 57 32.0	12.933
12	20 21 34.36	2.3398	15 6 19.3	9.959	12	22 10 34.68	2.3151	5 44 35.1	12.964
13	20 23 54.65	2.3366	14 56 19.0	10.051	13	22 12 47.54	2.3135	5 31 36.3	12.996
14	20 26 14.75	2.3333	14 46 13.2	10.141	14	22 15 0.30	2.3119	5 18 35.6	13.027
15	20 28 34.65	2.3301	14 36 2.1	10.229	15	22 17 12.97	2.3104	5 5 33.1	13.056
16	20 30 54.36	2.3270	14 25 45.7	10.317	16	22 19 25.55	2.3089	4 52 28.9	13.083
17	20 33 13.89	2.3239	14 15 24.0	10.405	17	22 21 38.04	2.3075	4 39 23.1	13.109
18	20 35 33.23	2.3207	14 4 57.1	10.491	18	22 23 50.45	2.3062	4 26 15.8	13.133
19	20 37 52.38	2.3176	13 54 25.1	10.575	19	22 26 2.78	2.3048	4 13 7.1	13.157
20	20 40 11.34	2.3144	13 43 48.1	10.658	20	22 28 15.03	2.3036	3 59 56.9	13.181
21	20 42 30.11	2.3113	13 33 6.1	10.741	21	22 30 27.21	2.3024	3 46 45.4	13.202
22	20 44 48.70	2.3082	13 22 19.2	10.822	22	22 32 39.32	2.3012	3 33 32.7	13.221
23	20 47 7.10	2.3051	S. 13 11 27.5	10.900	23	22 34 51.36	2.3002	S. 3 20 18.9	13.239
SUNDAY 30.					TUESDAY, NOVEMBER 1.				
0	20 49 25.31	2.3020	S. 13 0 31.2	10.978	0	22 37 3.34	2.1992	S. 3 7 4.0	13.257
1	20 51 43.34	2.2990	12 49 30.2	11.056	PHASES OF THE MOON.				
2	20 54 1.19	2.2961	12 38 24.5	11.132					
3	20 56 18.87	2.2933	12 27 14.3	11.207					
4	20 58 36.37	2.2902	12 15 59.6	11.281					
5	21 0 53.69	2.2873	12 4 40.6	11.353	○ Full Moon, . . . 7 1 59.1				
6	21 3 10.84	2.2844	11 53 17.3	11.424	☾ Last Quarter, . . 14 14 26.0				
7	21 5 27.82	2.2816	11 41 49.7	11.494	● New Moon, . . . 22 14 31.1				
8	21 7 44.63	2.2787	11 30 18.0	11.562	☾ First Quarter, . . 29 16 47.4				
9	21 10 1.26	2.2759	11 18 42.3	11.629					
10	21 12 17.73	2.2731	11 7 2.6	11.695					
11	21 14 34.03	2.2703	10 55 18.9	11.760					
12	21 16 50.17	2.2677	10 43 31.4	11.823					
13	21 19 6.15	2.2650	10 31 40.1	11.886					
14	21 21 21.97	2.2623	10 19 45.1	11.947					
15	21 23 37.63	2.2597	10 7 46.5	12.006					
16	21 25 53.14	2.2572	9 55 44.4	12.064					
17	21 28 8.50	2.2547	9 43 38.8	12.122					
18	21 30 23.70	2.2522	9 31 29.8	12.178	☾ Perigee, 4 9.4				
19	21 32 38.76	2.2497	9 19 17.5	12.233	☾ Apogee, 16 5.1				
20	21 34 53.67	2.2473	9 7 1.9	12.286	☾ Perigee, 31 6.1				
21	21 37 8.44	2.2450	8 54 43.2	12.337					
22	21 39 23.07	2.2427	8 42 21.4	12.388					
23	21 41 37.56	2.2404	8 29 56.6	12.438					
24	21 43 51.92	2.2382	S. 8 17 28.8	12.487					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
1	Sun W.	97° 41' 55"	2629	99° 20' 11"	2620	100° 58' 39"	2610	102° 37' 20"	2601
	Antares W.	38 43 54	2331	40 29 8	2320	42 14 39	2309	44 0 26	2298
	Fomalhaut E.	51 5 16	3163	49 38 22	3199	48 12 12	3243	46 46 54	3293
	α Pegasi E.	66 8 15	2470	64 26 20	2466	62 44 19	2463	61 2 14	2461
2	Sun W.	110 53 47	2559	112 33 38	2551	114 13 40	2544	115 53 52	2537
	Antares W.	52 52 52	2253	54 40 1	2245	56 27 22	2237	58 14 55	2229
	Fomalhaut E.	39 57 37	3670	38 40 18	3782	37 24 57	3911	36 11 48	4060
	α Pegasi E.	52 31 29	2465	50 49 26	2470	49 7 30	2476	47 25 43	2485
3	Antares W.	67 15 19	2196	69 3 53	2190	70 52 35	2186	72 41 24	2181
	α Arietis E.	80 33 45	2216	78 45 41	2211	76 57 30	2207	75 9 13	2203
	Saturn E.	86 30 27	2181	84 41 31	2176	82 52 27	2172	81 3 17	2167
	Jupiter E.	100 53 28	2169	99 4 13	2163	97 14 49	2156	95 25 18	2153
4	Antares W.	81 47 3	2164	83 36 25	2162	85 25 50	2160	87 15 18	2159
	α Aquilæ W.	36 53 11	2642	38 11 0	2622	39 31 0	2616	40 52 58	2605
	α Arietis E.	66 6 35	2191	64 17 54	2190	62 29 12	2191	60 40 31	2191
	Saturn E.	71 56 1	2152	70 6 21	2151	68 16 39	2150	66 26 56	2150
	Jupiter E.	86 16 11	2137	84 26 8	2135	82 36 2	2133	80 45 53	2132
	Aldebaran E.	99 6 46	2173	97 17 38	2171	95 28 27	2170	93 39 14	2169
5	α Aquilæ W.	48 5 52	3002	49 36 2	2959	51 7 6	2921	52 38 58	2887
	α Arietis E.	51 37 36	2204	49 49 15	2210	48 1 2	2216	46 12 58	2223
	Saturn E.	57 18 28	2156	55 28 54	2159	53 39 25	2163	51 50 2	2167
	Jupiter E.	71 35 1	2134	69 44 54	2136	67 54 50	2139	66 4 50	2142
	Aldebaran E.	84 33 1	2171	82 43 50	2173	80 54 42	2176	79 5 39	2180
6	α Aquilæ W.	60 27 25	2775	62 2 25	2762	63 37 43	2750	65 13 16	2742
	α Arietis E.	37 15 49	2276	35 29 14	2291	33 43 2	2309	31 57 15	2326
	Saturn E.	42 45 9	2201	40 56 43	2210	39 8 31	2221	37 20 35	2232
	Jupiter E.	56 56 19	2166	55 7 0	2172	53 17 51	2180	51 28 53	2187
	Aldebaran E.	70 1 57	2205	68 13 37	2212	66 25 28	2220	64 37 30	2228
7	α Aquilæ W.	73 12 59	2726	74 49 2	2730	76 25 2	2734	78 0 57	2738
	Fomalhaut W.	47 34 25	3177	49 1 2	3138	50 28 26	3104	51 56 31	3076
	Jupiter E.	42 27 9	2233	40 39 31	2244	38 52 9	2256	37 5 5	2268
	Aldebaran E.	55 40 59	2278	53 54 27	2289	52 8 12	2302	50 22 16	2315
	Mars E.	82 43 26	2276	80 59 17	2287	79 15 23	2292	77 31 45	2298
	Pollux E.	97 45 14	2213	95 59 34	2224	94 14 9	2234	92 28 59	2245
8	Fomalhaut W.	59 24 0	2990	60 54 25	2962	62 25 0	2977	63 55 42	2973
	α Pegasi W.	38 12 57	2710	39 49 23	2698	41 26 6	2689	43 3 1	2684
	Aldebaran E.	41 37 40	2291	39 53 52	2409	38 10 30	2427	36 27 34	2446
	Mars E.	68 57 54	2474	67 16 4	2487	65 34 33	2502	63 53 22	2516
	Pollux E.	83 47 26	2409	82 4 4	2423	80 21 2	2436	78 38 21	2453
9	Fomalhaut W.	71 29 30	2983	73 0 4	2969	74 30 30	2997	76 0 47	3005
	α Pegasi W.	51 8 28	2637	52 45 26	2692	54 22 16	2699	55 58 57	2707
	Mars E.	55 32 41	2594	53 53 38	2610	52 14 57	2627	50 36 39	2644
	Pollux E.	70 10 28	2535	68 30 3	2553	66 50 3	2571	65 10 28	2589
10	Fomalhaut W.	83 29 4	3064	84 57 58	3078	86 26 35	3092	87 54 54	3106

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	SUN W.	104° 16' 14"	2592	105° 55' 20"	2583	107° 34' 36"	2575	109° 14' 7"	2567
	Antares W.	45 46 28	2269	47 32 44	2280	49 19 13	2270	51 5 56	2262
	Fomalhaut E.	45 22 34	3350	43 59 20	3414	42 37 19	3488	41 16 41	3573
	α Pegasi E.	59 20 6	2460	57 37 57	2460	55 55 47	2460	54 13 37	2461
2	SUN W.	117 34 14	2530	119 14 46	2523	120 55 27	2517	122 36 16	2512
	Antares W.	60 2 39	2222	61 50 34	2215	63 38 39	2208	65 26 54	2202
	Fomalhaut E.	35 1 7	4233	33 53 12	4434	32 48 21	4670	31 46 56	4947
	α Pegasi E.	45 44 8	2495	44 2 48	2508	42 21 46	2594	40 41 6	2542
3	Antares W.	74 30 20	2177	76 19 22	2173	78 8 30	2160	79 57 44	2166
	α Arietis E.	73 20 50	2200	71 32 22	2197	69 43 50	2194	67 55 14	2192
	Saturn E.	79 14 0	2163	77 24 37	2160	75 35 9	2157	73 45 37	2155
	Jupiter E.	93 35 40	2149	91 45 56	2145	89 56 6	2142	88 6 11	2139
4	Antares W.	89 4 47	2159	90 54 16	2159	92 43 45	2159	94 33 14	2160
	α Aquilæ W.	42 16 41	3243	43 41 59	3171	45 8 43	3108	46 36 43	3052
	α Arietis E.	58 51 50	2122	57 3 11	2124	55 14 35	2127	53 26 3	2200
	Saturn E.	64 37 13	2150	62 47 30	2150	60 57 47	2151	59 8 6	2153
	Jupiter E.	78 55 42	2132	77 5 31	2132	75 15 20	2132	73 25 10	2133
	Aldebaran E.	91 50 0	2169	90 0 45	2168	88 11 29	2169	86 22 14	2170
5	α Aquilæ W.	54 11 33	2258	55 44 46	2232	57 18 32	2211	58 52 46	2192
	α Arietis E.	44 25 5	2231	42 37 24	2240	40 49 56	2251	39 2 44	2262
	Saturn E.	50 0 45	2172	48 11 36	2178	46 22 36	2186	44 33 47	2193
	Jupiter E.	64 14 55	2146	62 25 6	2150	60 35 23	2155	58 45 47	2160
	Aldebaran E.	77 16 41	2184	75 27 49	2188	73 39 4	2193	71 50 26	2199
6	α Aquilæ W.	66 49 0	2135	68 24 53	2131	70 0 52	2128	71 36 55	2127
	α Arietis E.	30 11 56	2350	28 27 10	2376	26 43 1	2406	24 59 35	2442
	Saturn E.	35 32 55	2244	33 45 33	2258	31 58 32	2274	30 11 54	2291
	Jupiter E.	49 40 6	2196	47 51 32	2204	46 3 10	2213	44 15 2	2223
	Aldebaran E.	62 49 44	2237	61 2 11	2246	59 14 52	2256	57 27 48	2266
7	α Aquilæ W.	79 36 46	2145	81 12 26	2153	82 47 56	2162	84 23 14	2172
	Fomalhaut W.	53 25 10	3052	54 54 19	3031	56 23 53	3014	57 53 48	3001
	Jupiter E.	35 18 18	2281	33 31 50	2294	31 45 41	2308	29 59 53	2323
	Aldebaran E.	48 36 39	2229	46 51 22	2244	45 6 26	2259	43 21 52	2274
	Mars E.	75 48 24	2422	74 5 20	2433	72 22 33	2446	70 40 4	2460
	Pollux E.	90 44 5	2357	88 59 28	2369	87 15 9	2382	85 31 8	2395
8	Fomalhaut W.	65 26 28	2272	66 57 16	2272	68 28 4	2274	69 58 49	2277
	α Pegasi W.	44 40 3	2681	46 17 9	2679	47 54 17	2680	49 31 24	2682
	Aldebaran E.	34 45 5	2466	33 3 4	2488	31 21 34	2511	29 40 36	2535
	Mars E.	62 12 31	2531	60 32 1	2547	58 51 53	2562	57 12 6	2578
	Pollux E.	76 56 1	2468	75 14 3	2485	73 32 28	2501	71 51 16	2518
9	Fomalhaut W.	77 30 53	3015	79 0 47	3026	80 30 27	3038	81 59 53	3050
	α Pegasi W.	57 35 27	2716	59 11 46	2725	60 47 52	2736	62 23 44	2747
	Mars E.	48 58 44	2661	47 21 12	2678	45 44 3	2695	44 7 16	2712
	Pollux E.	63 31 18	2608	61 52 34	2626	60 14 15	2646	58 36 22	2666
10	Fomalhaut W.	89 22 54	3124	90 50 35	3141	92 17 55	3158	93 44 54	3176

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	α Pegasi W.	63 59 22	9758	65 34 45	9770	67 9 52	9783	68 44 42	9725
	α Arietis W.	20 26 23	9854	21 59 41	9835	23 33 23	9823	25 7 21	2816
	Mars E.	42 30 52	9739	40 54 51	9747	39 19 14	9765	37 44 0	9782
	Pollux E.	56 58 56	9686	55 21 57	9706	53 45 25	9797	52 9 21	9748
	Regulus E.	93 29 44	9607	91 50 59	9624	90 12 37	9640	88 34 37	9657
11	α Arietis W.	32 57 57	9827	34 31 50	9834	36 5 34	9842	37 39 7	9851
	Saturn W.	27 15 49	9775	28 50 49	9783	30 25 39	9792	32 0 18	9801
	Mars E.	29 53 39	9873	28 20 45	9891	26 48 15	9910	25 16 9	9939
	Pollux E.	44 16 12	9802	42 43 5	9827	41 10 29	9912	39 38 26	9939
	Regulus E.	80 30 9	9738	78 54 20	9754	77 18 52	9770	75 43 45	9785
	Sun E.	130 37 41	3087	129 9 15	3103	127 41 9	3119	126 13 22	3134
12	α Arietis W.	45 23 50	9901	46 56 7	9919	48 28 11	9923	50 0 1	9934
	Saturn W.	39 50 12	9855	41 23 29	9866	42 56 31	9877	44 29 19	9889
	Jupiter W.	25 20 12	9830	26 54 1	9841	28 27 36	9852	30 0 56	9864
	Pollux E.	32 7 11	3096	30 38 57	3135	29 11 30	3178	27 44 55	3225
	Regulus E.	67 53 12	9892	66 20 4	9876	64 47 14	9890	63 14 42	9904
	Venus E.	87 41 56	3315	86 18 2	3330	84 54 25	3345	83 31 5	3359
	Sun E.	118 59 10	3212	117 33 15	3226	116 7 37	3240	114 42 15	3254
13	α Arietis W.	57 35 52	9984	59 6 25	9993	60 36 46	3003	62 6 55	3019
	Saturn W.	52 9 50	2941	53 41 17	2951	55 12 31	2961	56 43 33	2969
	Jupiter W.	37 44 1	2918	39 15 57	2927	40 47 41	2938	42 19 12	2946
	Aldebaran W.	24 40 30	3050	26 9 34	3055	27 38 39	3056	29 7 43	3057
	Regulus E.	55 36 20	2969	54 5 28	2981	52 34 51	2993	51 4 29	3005
	Venus E.	76 38 34	3429	75 16 50	3442	73 55 21	3454	72 34 5	3465
	Sun E.	107 39 25	3319	106 15 35	3331	104 51 59	3342	103 28 36	3352
14	Saturn W.	64 16 3	3009	65 46 4	3016	67 15 57	3022	68 45 42	3029
	Jupiter W.	49 54 2	2988	51 24 30	2994	52 54 50	3001	54 25 1	3007
	Aldebaran W.	36 32 22	3079	38 1 6	3076	39 29 45	3079	40 58 20	3083
	Regulus E.	43 36 7	3057	42 7 5	3068	40 38 16	3078	39 9 39	3087
	Venus E.	65 50 52	3517	64 30 47	3526	63 10 52	3535	61 51 7	3544
	Sun E.	96 34 35	3400	95 12 19	3408	93 50 11	3415	92 28 11	3422
15	Saturn W.	76 12 45	3052	77 41 53	3055	79 10 58	3058	80 39 59	3060
	Jupiter W.	61 54 17	3031	63 23 51	3034	64 53 22	3036	66 22 50	3039
	Aldebaran W.	48 20 14	3097	49 48 27	3099	51 16 36	3101	52 44 47	3102
	Regulus E.	31 49 30	3136	30 22 4	3146	28 54 50	3158	27 27 50	3170
	Venus E.	55 14 25	3577	53 55 26	3582	52 36 32	3587	51 17 44	3592
	Sun E.	85 40 0	3449	84 18 39	3454	82 57 23	3456	81 36 10	3459
16	Jupiter W.	73 49 37	3043	75 18 56	3043	76 48 16	3042	78 17 37	3040
	Aldebaran W.	60 5 17	3102	61 33 24	3101	63 1 32	3100	64 29 42	3097
	Mars W.	29 26 35	3225	30 52 14	3224	32 17 55	3221	33 43 39	3218
	Venus E.	44 44 51	3610	43 26 27	3612	42 8 6	3614	40 49 47	3616
	Sun E.	74 50 40	3465	73 29 37	3465	72 8 34	3464	70 47 30	3463
17	Aldebaran W.	71 51 17	3082	73 19 49	3078	74 48 26	3073	76 17 8	3069
	Mars W.	40 53 22	3198	42 19 34	3193	43 45 52	3188	45 12 16	3182
	Pollux W.	30 55 6	3314	32 19 1	3291	33 43 23	3269	35 8 11	3248
	Venus E.	34 18 43	3626	33 0 37	3622	31 42 33	3631	30 24 32	3635

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LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXh.	P. L. of Diff.
10	α Pegasi W.	70° 19' 16"	2808	71° 53' 33"	2822	73° 27' 32"	2836	75° 1' 13"	2849
	α Arietis W.	26 41 28	2813	28 15 39	2814	29 49 49	2816	31 23 56	2821
	Mars E.	36 9 9	2800	34 34 41	2818	33 0 37	2836	31 26 56	2855
	Pollux E.	50 33 45	2769	48 58 37	2792	47 23 58	2815	45 49 50	2838
	Regulus E.	86 57 0	2674	85 19 45	2689	83 42 51	2706	82 6 19	2732
11	α Arietis W.	39 12 29	2880	40 45 39	2870	42 18 36	2880	43 51 20	2891
	Saturn W.	33 34 44	2811	35 8 57	2822	36 42 56	2833	38 16 41	2844
	Mars E.	23 44 27	2949	22 13 10	2960	20 42 18	2989	19 11 52	3013
	Pollux E.	38 6 57	2967	36 36 3	2997	35 5 46	3028	33 36 8	3061
	Regulus E.	74 8 58	2801	72 34 32	2817	71 0 26	2831	69 26 39	2847
	Sun E.	124 45 54	3150	123 18 45	3166	121 51 55	3181	120 25 23	3197
12	α Arietis W.	51 31 37	2944	53 3 0	2954	54 34 10	2965	56 5 7	2974
	Saturn W.	46 1 52	2900	47 34 11	2910	49 6 17	2920	50 38 10	2931
	Jupiter W.	31 34 1	2875	33 6 52	2886	34 39 29	2897	36 11 52	2908
	Pollux E.	26 19 16	3277	24 54 38	3338	23 31 10	3408	22 9 2	3489
	Regulus E.	61 42 28	2917	60 10 31	2931	58 38 51	2944	57 7 28	2956
	Venus E.	82 8 2	3374	80 45 16	3389	79 22 47	3402	78 0 33	3415
	Sun E.	113 17 10	3268	111 52 21	3281	110 27 47	3294	109 3 29	3306
13	α Arietis W.	63 36 53	3020	65 6 41	3029	66 36 18	3037	68 5 45	3044
	Saturn W.	58 14 24	2978	59 45 4	2987	61 15 33	2994	62 45 53	3002
	Jupiter W.	43 50 32	2956	45 21 40	2964	46 52 38	2973	48 23 25	2981
	Aldebaran W.	30 36 45	3060	32 5 44	3082	33 34 40	3085	35 3 33	3068
	Regulus E.	49 34 22	3016	48 4 29	3026	46 34 49	3037	45 5 22	3047
	Venus E.	71 13 2	3477	69 52 12	3488	68 31 34	3497	67 11 7	3508
	Sun E.	102 5 25	3363	100 42 26	3372	99 19 38	3382	97 57 1	3392
14	Saturn W.	70 15 19	3034	71 44 50	3039	73 14 14	3044	74 43 32	3048
	Jupiter W.	55 55 5	3013	57 25 2	3018	58 54 53	3022	60 24 38	3027
	Aldebaran W.	42 26 50	3087	43 55 16	3089	45 23 39	3092	46 51 58	3095
	Regulus E.	37 41 14	3096	36 13 0	3106	34 44 58	3116	33 17 8	3126
	Venus E.	60 31 31	3551	59 12 3	3558	57 52 43	3565	56 33 31	3571
	Sun E.	91 6 19	3429	89 44 35	3434	88 22 57	3440	87 1 26	3445
15	Saturn W.	82 8 57	3062	83 37 53	3064	85 6 47	3065	86 35 40	3065
	Jupiter W.	67 52 15	3041	69 21 37	3042	70 50 58	3042	72 20 18	3043
	Aldebaran W.	54 12 54	3103	55 41 0	3103	57 9 6	3104	58 37 11	3103
	Regulus E.	26 1 5	3183	24 34 36	3198	23 8 24	3215	21 42 33	3236
	Venus E.	49 59 1	3596	48 40 22	3600	47 21 48	3604	46 3 18	3607
	Sun E.	80 15 0	3462	78 53 53	3463	77 32 48	3464	76 11 44	3464
16	Jupiter W.	79 47 0	3039	81 16 25	3036	82 45 53	3034	84 15 24	3030
	Aldebaran W.	65 57 55	3096	67 26 10	3093	68 54 28	3090	70 22 50	3086
	Mars W.	35 9 27	3214	36 35 19	3211	38 1 15	3207	39 27 16	3203
	Venus E.	39 31 30	3618	38 13 15	3620	36 55 2	3622	35 36 51	3624
	Sun E.	69 26 25	3469	68 5 18	3459	66 44 8	3456	65 22 55	3453
17	Aldebaran W.	77 45 56	3063	79 14 51	3057	80 43 53	3052	82 13 2	3045
	Mars W.	46 38 47	3175	48 5 26	3169	49 32 12	3163	50 59 6	3155
	Pollux W.	36 33 23	3230	37 58 57	3212	39 24 52	3195	40 51 7	3180
	Venus E.	29 6 35	3639	27 48 43	3644	26 30 56	3649	25 13 15	3658

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LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Neon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
17	SUN	E.	64 1 38	3449	62 40 17	3446	61 18 52	3441	59 57 22	3436
18	Aldebaran	W.	83 42 19	3039	85 11 44	3031	86 41 18	3023	88 11 2	3015
	Mars	W.	52 26 9	3148	53 53 21	3140	55 20 42	3133	56 48 13	3123
	Pollux	W.	42 17 40	3105	43 44 31	3150	45 11 40	3135	46 39 7	3180
	SUN	E.	53 8 19	3406	51 46 9	3399	50 23 51	3391	49 1 24	3383
19	Mars	W.	64 8 30	3077	65 37 8	3067	67 5 58	3056	68 35 1	3046
	Pollux	W.	54 0 33	3054	55 29 39	3042	56 59 0	3029	58 28 37	3016
	SUN	E.	42 6 50	3340	40 43 25	3333	39 19 50	3323	37 56 4	3313
20	Mars	W.	76 3 34	2991	77 33 58	2980	79 4 36	2969	80 35 28	2957
	Regulus	W.	28 58 48	2955	30 29 57	2937	32 1 29	2920	33 33 22	2904
	SUN	E.	30 54 29	2966	29 29 38	2957	28 4 36	2947	26 39 23	2939
24	SUN	W.	17 6 52	2945	18 38 14	2924	20 10 2	2906	21 42 13	2890
	α Aquilæ	E.	75 12 37	3006	73 42 32	3005	72 12 26	3006	70 42 21	3006
	Fomalhaut	E.	102 17 59	3027	100 48 20	3013	99 18 23	3000	97 48 10	2986
25	SUN	W.	29 27 49	2925	31 1 44	2915	32 35 52	2906	34 10 12	2797
	α Aquilæ	E.	63 13 3	3039	61 43 38	3050	60 14 27	3063	58 45 32	3078
	Fomalhaut	E.	90 13 40	2941	88 42 13	2934	87 10 37	2928	85 38 54	2924
26	SUN	W.	42 4 46	2756	43 40 12	2748	45 15 48	2741	46 51 33	2735
	α Aquilæ	E.	51 26 47	3199	50 0 37	3234	48 35 8	3273	47 10 25	3319
	Fomalhaut	E.	77 59 14	2915	76 27 14	2916	74 55 16	2920	73 23 22	2924
27	SUN	W.	54 52 25	2705	56 28 58	2699	58 5 39	2693	59 42 28	2686
	Antares	W.	21 53 9	2460	23 35 19	2443	25 17 52	2429	27 0 45	2417
	Fomalhaut	E.	65 45 39	2964	64 14 41	2977	62 43 59	2992	61 13 36	3009
	α Pegasi	E.	82 35 28	2512	80 54 31	2508	79 13 29	2505	77 32 23	2503
28	SUN	W.	67 48 8	2666	69 25 34	2661	71 3 6	2657	72 40 43	2653
	Antares	W.	35 38 51	2375	37 23 2	2368	39 7 23	2362	40 51 53	2355
	Fomalhaut	E.	53 47 58	3133	52 20 29	3169	50 53 43	3209	49 27 44	3253
	α Pegasi	E.	69 6 14	2497	67 24 57	2497	65 43 40	2498	64 2 24	2500
29	SUN	W.	80 50 5	2636	82 28 11	2639	84 6 22	2629	85 44 37	2627
	Antares	W.	49 36 16	2333	51 21 27	2329	53 6 44	2325	54 52 7	2322
	Fomalhaut	E.	42 32 56	3571	41 13 50	3661	39 56 21	3764	38 40 41	3880
	α Pegasi	E.	55 37 2	2520	53 56 16	2527	52 15 40	2535	50 35 15	2544
30	SUN	W.	93 56 44	2614	95 35 20	2612	97 13 59	2610	98 52 40	2609
	Antares	W.	63 40 10	2307	65 25 59	2305	67 11 51	2302	68 57 46	2300
	α Pegasi	E.	42 17 7	2618	40 38 36	2640	39 0 36	2666	37 23 11	2697
	α Arietis	E.	84 7 40	2326	82 22 18	2324	80 36 53	2322	78 51 25	2320
	Saturn	E.	88 7 53	2285	86 21 32	2284	84 35 9	2282	82 48 43	2281
31	SUN	W.	107 6 38	2602	108 45 30	2601	110 24 23	2600	112 3 18	2599
	Antares	W.	77 48 4	2294	79 34 13	2292	81 20 24	2291	83 6 36	2291
	α Arietis	E.	70 3 47	2318	68 18 14	2318	66 32 41	2318	64 47 8	2319
	Saturn	E.	73 56 5	2275	72 9 29	2275	70 22 53	2275	68 36 17	2276
	Jupiter	E.	87 34 44	2245	85 47 24	2245	84 0 3	2245	82 12 42	2245

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Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
17	SUN	E.	58° 35' 46"	3431	57° 14' 4"	3425	55° 52' 16"	3419	54° 30' 21"	3413
18	Aldebaran	W.	89 40 56	3008	91 10 59	3000	92 41 12	2991	94 11 36	2982
	Mars	W.	58 15 55	3114	59 43 47	3105	61 11 50	3096	62 40 4	3087
	Pollux	W.	48 6 52	3107	49 34 53	3094	51 3 10	3081	52 31 43	3067
	SUN	E.	47 38 48	3375	46 16 3	3367	44 53 9	3358	43 30 5	3349
19	Mars	W.	70 4 17	3035	71 33 46	3025	73 3 28	3014	74 33 24	3002
	Pollux	W.	59 58 30	3003	61 28 39	2991	62 59 3	2978	64 29 43	2965
	SUN	E.	36 32 7	3303	35 7 59	3294	33 43 40	3284	32 19 10	3275
20	Mars	W.	82 6 35	2945	83 37 57	2933	85 9 34	2921	86 41 26	2910
	Regulus	W.	35 5 36	2888	36 38 10	2873	38 11 4	2858	39 44 17	2844
	SUN	E.	25 14 0	3231	23 48 28	3225	22 22 48	3219	20 57 1	3214
24	SUN	W.	23 14 45	2875	24 47 36	2862	26 20 44	2848	27 54 9	2837
	α Aquilæ	E.	69 12 18	3011	67 42 19	3016	66 12 26	3022	64 42 40	3029
	Fomalhaut	E.	96 17 42	2977	94 47 0	2966	93 16 5	2957	91 44 58	2948
25	SUN	W.	35 44 44	2788	37 19 28	2779	38 54 24	2771	40 29 30	2763
	α Aquilæ	E.	57 16 56	3096	55 48 42	3118	54 20 54	3141	52 53 34	3168
	Fomalhaut	E.	84 7 5	2990	82 35 12	2917	81 3 15	2915	79 31 15	2914
26	SUN	W.	48 27 27	2729	50 3 29	2722	51 39 40	2716	53 15 59	2710
	α Aquilæ	E.	45 46 35	3370	44 23 44	3427	43 1 58	3422	41 41 25	3563
	Fomalhaut	E.	71 51 33	2998	70 19 50	2935	68 48 15	2943	67 16 51	2953
27	SUN	W.	61 19 24	2684	62 56 26	2679	64 33 34	2675	66 10 48	2670
	Antares	W.	28 43 55	2407	30 27 20	2397	32 10 59	2389	33 54 50	2382
	Fomalhaut	E.	59 43 34	3028	58 13 56	3050	56 44 45	3075	55 16 5	2109
	α Pegasi	E.	75 51 14	2501	74 10 2	2499	72 28 47	2496	70 47 31	2497
28	SUN	W.	74 18 26	2649	75 56 14	2646	77 34 6	2643	79 12 3	2639
	Antares	W.	42 36 32	2350	44 21 19	2346	46 6 12	2342	47 51 11	2337
	Fomalhaut	E.	48 2 37	3302	46 38 28	3358	45 15 23	3421	43 53 30	3491
	α Pegasi	E.	62 21 11	2502	60 40 1	2506	58 58 56	2510	57 17 56	2514
29	SUN	W.	87 22 55	2624	89 1 17	2621	90 39 43	2619	92 18 12	2617
	Antares	W.	56 37 35	2319	58 23 7	2315	60 8 44	2313	61 54 25	2310
	Fomalhaut	E.	37 27 1	4013	36 15 34	4165	35 6 35	4341	34 0 20	4544
	α Pegasi	E.	48 55 3	2555	47 15 6	2567	45 35 26	2581	43 56 5	2598
30	SUN	W.	100 31 23	2607	102 10 9	2605	103 48 57	2604	105 27 47	2603
	Antares	W.	70 43 45	2298	72 29 47	2297	74 15 51	2296	76 1 57	2295
	α Pegasi	E.	35 46 27	2732	34 10 30	2773	32 35 27	2822	31 1 28	2880
	α Arietis	E.	77 5 55	2320	75 20 24	2319	73 34 52	2319	71 49 20	2318
	Saturn	E.	81 2 15	2279	79 15 45	2278	77 29 13	2277	75 42 40	2276
31	SUN	W.	113 42 14	2599	115 21 10	2600	117 0 5	2600	118 39 0	2601
	Antares	W.	84 52 48	2291	86 39 1	2291	88 25 14	2291	90 11 27	2291
	α Arietis	E.	63 1 36	2320	61 16 6	2322	59 30 38	2324	57 45 13	2326
	Saturn	E.	66 49 42	2276	65 3 7	2277	63 16 33	2277	61 30 0	2279
	Jupiter	E.	80 25 21	2244	78 37 59	2244	76 50 37	2244	75 3 15	2244

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sideral Time of the Semi-diameter passing the Meridian.	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.				
		^h ^m ^s	^s	S. [°] ['] ["]	["]	['] ["]	^s	^m ^s	^s	
Tues.	1	14 27 18.13	9.810	S. 14 34 34.8	-47.86	16 ' 9.95	67.00	16 17.66	0.045	
Wed.	2	14 31 13.97	9.844	14 53 36.4	47.27	16 10.20	67.12	16 18.38	0.012	
Thur.	3	14 35 10.61	9.877	15 12 23.4	46.66	16 10.45	67.23	16 18.30	0.021	
Frid.	4	14 39 8.05	9.911	15 30 55.5	46.02	16 10.69	67.35	16 17.42	0.055	
Sat.	5	14 43 6.31	9.945	15 49 12.2	45.37	16 10.93	67.46	16 15.72	0.089	
Sun.	6	14 47 5.40	9.980	16 7 13.1	44.71	16 11.17	67.57	16 13.19	0.124	
Mon.	7	14 51 5.33	10.015	16 24 58.0	44.02	16 11.40	67.69	16 9.83	0.159	
Tues.	8	14 55 6.10	10.049	16 42 26.3	43.32	16 11.63	67.81	16 5.63	0.193	
Wed.	9	14 59 7.73	10.085	16 59 37.5	42.61	16 11.86	67.93	16 0.57	0.229	
Thur.	10	15 3 10.22	10.121	17 16 31.3	41.88	16 12.08	68.05	15 54.65	0.265	
Frid.	11	15 7 13.58	10.157	17 33 7.6	41.13	16 12.31	68.17	15 47.87	0.301	
Sat.	12	15 11 17.80	10.194	17 49 25.7	40.37	16 12.52	68.29	15 40.23	0.337	
Sun.	13	15 15 22.89	10.230	18 5 25.3	39.58	16 12.73	68.41	15 31.71	0.373	
Mon.	14	15 19 28.85	10.266	18 21 5.9	38.78	16 12.94	68.53	15 22.33	0.409	
Tues.	15	15 23 35.68	10.302	18 36 27.2	37.97	16 13.15	68.66	15 12.09	0.445	
Wed.	16	15 27 43.38	10.338	18 51 28.9	37.14	16 13.35	68.77	15 0.98	0.481	
Thur.	17	15 31 51.94	10.374	19 6 10.4	36.30	16 13.55	68.89	14 49.00	0.517	
Frid.	18	15 36 1.35	10.410	19 20 31.3	35.43	16 13.74	69.00	14 36.18	0.553	
Sat.	19	15 40 11.59	10.444	19 34 31.2	34.53	16 13.93	69.12	14 22.54	0.587	
Sun.	20	15 44 22.65	10.478	19 48 10.0	33.63	16 14.12	69.23	14 8.08	0.621	
Mon.	21	15 48 34.53	10.510	20 1 27.1	32.73	16 41.31	69.34	13 52.79	0.654	
Tues.	22	15 52 47.22	10.544	20 14 22.2	31.82	16 14.49	69.45	13 36.70	0.687	
Wed.	23	15 57 0.69	10.576	20 26 54.9	30.88	16 14.68	69.56	13 19.82	0.719	
Thur.	24	16 1 14.93	10.609	20 39 4.8	29.93	16 14.86	69.66	13 2.19	0.751	
Frid.	25	16 5 29.92	10.640	20 50 51.7	28.96	16 15.04	69.76	12 43.81	0.782	
Sat.	26	16 9 45.65	10.670	21 2 15.1	27.98	16 15.21	69.86	12 24.68	0.812	
Sun.	27	16 14 2.08	10.699	21 13 14.8	26.97	16 15.38	69.96	12 4.86	0.841	
Mon.	28	16 18 19.21	10.728	21 23 50.4	25.96	16 15.56	70.06	11 44.35	0.870	
Tues.	29	16 22 37.02	10.755	21 34 1.6	24.94	16 15.72	70.16	11 23.16	0.897	
Wed.	30	16 26 55.48	10.782	21 43 48.1	23.91	16 15.88	70.25	11 1.31	0.924	
Thur.	31	16 31 14.58	10.809	S. 21 53 9.7	-22.86	16 16.03	70.34	10 38.83	0.951	

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0.19 from the Sideral Time.

— prefixed to the hourly change of declination indicates that the south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Equation of Time, to be added to Mean Time.	Diff. for 1 hour.	Sidereal Time, or Right Ascension of Mean Sun.					
		Apparent Right Ascension.		Diff. for 1 hour.	Apparent Declination.		Diff. for 1 hour.								
		^h ^m ^s	^s	[°] ['] ["]	^m ^s	^s									
Tues.	1	14	27	20.80	9.811	S. 14	34	47.8	-47.86	16	17.68	0.045	14	43	38.48
Wed.	2	14	31	16.65	9.844	14	53	49.2	47.26	16	18.39	0.012	14	47	35.04
Thur.	3	14	35	13.30	9.877	15	12	36.1	46.65	16	18.30	0.021	14	51	31.60
Frid.	4	14	39	10.74	9.911	15	31	8.0	46.01	16	17.41	0.055	14	55	28.15
Sat.	5	14	43	9.01	9.945	15	49	24.5	45.36	16	15.70	0.089	14	59	24.71
Sun.	6	14	47	8.10	9.980	16	7	25.2	44.70	16	13.16	0.124	15	3	21.26
Mon.	7	14	51	8.03	10.015	16	25	9.9	44.01	16	9.79	0.159	15	7	17.82
Tues.	8	14	55	8.80	10.049	16	42	37.9	43.31	16	5.58	0.193	15	11	14.37
Wed.	9	14	59	10.42	10.085	16	59	48.9	42.60	16	0.51	0.229	15	15	10.93
Thur.	10	15	3	12.90	10.121	17	16	42.5	41.87	15	54.58	0.265	15	19	7.48
Frid.	11	15	7	16.25	10.157	17	33	18.5	41.12	15	47.79	0.301	15	23	4.04
Sat.	12	15	11	20.45	10.193	17	49	36.3	40.36	15	40.14	0.337	15	27	0.59
Sun.	13	15	15	25.53	10.229	18	5	35.6	39.57	15	31.62	0.373	15	30	57.15
Mon.	14	15	19	31.47	10.265	18	21	15.9	38.77	15	22.23	0.409	15	34	53.70
Tues.	15	15	23	38.28	10.301	18	36	36.9	37.96	15	11.98	0.445	15	38	50.26
Wed.	16	15	27	45.96	10.337	18	51	38.2	37.13	15	0.86	0.481	15	42	46.81
Thur.	17	15	31	54.49	10.373	19	6	19.4	36.29	14	48.88	0.517	15	46	43.37
Frid.	18	15	36	3.87	10.409	19	20	40.0	35.42	14	36.05	0.553	15	50	39.92
Sat.	19	15	40	14.08	10.443	19	34	39.6	34.54	14	22.40	0.587	15	54	36.48
Sun.	20	15	44	25.11	10.477	19	48	18.0	33.64	14	7.93	0.621	15	58	33.04
Mon.	21	15	48	36.96	10.510	20	1	34.8	32.74	13	52.64	0.654	16	2	29.60
Tues.	22	15	52	49.61	10.543	20	14	29.5	31.81	13	36.54	0.687	16	6	26.15
Wed.	23	15	57	3.04	10.575	20	27	1.8	30.87	13	19.66	0.719	16	10	22.71
Thur.	24	16	1	17.24	10.608	20	39	11.3	29.92	13	2.02	0.751	16	14	19.26
Frid.	25	16	5	32.18	10.638	20	50	57.8	28.95	12	43.64	0.782	16	18	15.82
Sat.	26	16	9	47.86	10.668	21	2	20.9	27.97	12	24.51	0.812	16	22	12.37
Sun.	27	16	14	4.24	10.697	21	13	20.3	26.96	12	4.69	0.841	16	26	8.93
Mon.	28	16	18	21.31	10.726	21	23	55.5	25.95	11	44.18	0.870	16	30	5.49
Tues.	29	16	22	39.06	10.753	21	34	6.4	24.93	11	22.99	0.897	16	34	2.05
Wed.	30	16	26	57.46	10.780	21	43	52.5	23.90	11	1.14	0.924	16	37	58.60
Thur.	31	16	31	16.50	10.807	S. 21	53	13.8	-22.85	10	38.66	0.951	16	41	55.16

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

— prefixed to the hourly change of declination indicates that the south declinations are increasing.

Diff. for 1 hour,
+ 9.8565.
(Table III.)

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal $^{\circ}$.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ'						
1	305	219 ⁰ 14' 21.4"	13 ¹ 24.2"	150.25	+0.72	9.9964316	-47.2	9 ^h 14 ^m 50.37 ^s	
2	306	220 14 28.1	13 30.8	150.31	0.72	.9963187	46.7	9 10 54.46	
3	307	221 14 36.4	13 39.0	150.38	0.68	.9962073	46.0	9 6 58.55	
4	308	222 14 46.3	13 48.8	150.45	0.62	.9960975	45.3	9 3 2.64	
5	309	223 14 57.9	14 0.3	150.52	0.51	.9959894	44.6	8 59 6.73	
6	310	224 15 11.2	14 13.4	150.59	0.41	.9958829	43.9	8 55 10.82	
7	311	225 15 26.2	14 28.3	150.66	0.29	.9957782	43.2	8 31 14.91	
8	312	226 15 43.0	14 45.0	150.74	0.16	.9956753	42.4	8 47 19.00	
9	313	227 16 1.7	15 3.6	150.82	+0.04	.9955743	41.6	8 43 23.09	
10	314	228 16 22.2	15 23.9	150.90	-0.09	.9954752	40.8	8 39 27.18	
11	315	229 16 44.6	15 46.1	150.98	0.19	.9953778	40.1	8 35 31.28	
12	316	230 17 8.9	16 10.3	151.05	0.28	.9952821	39.5	8 31 35.37	
13	317	231 17 35.1	16 36.3	151.13	0.35	.9951880	38.9	8 27 39.46	
14	318	232 18 3.2	17 4.2	151.21	0.37	.9950954	38.3	8 23 43.55	
15	319	233 18 33.2	17 34.1	151.29	0.37	.9950041	37.8	8 19 47.64	
16	320	234 19 5.0	18 5.8	151.36	0.34	.9949140	37.3	8 15 51.73	
17	321	235 19 38.6	18 39.3	151.44	0.28	.9948251	36.9	8 11 55.82	
18	322	236 20 14.0	19 14.6	151.51	0.20	.9947375	36.2	8 7 59.91	
19	323	237 20 51.1	19 51.5	151.57	-0.08	.9946509	35.8	8 4 4.00	
20	324	238 21 29.6	20 29.9	151.64	+0.04	.9945653	35.4	8 0 8.09	
21	325	239 22 9.7	21 9.8	151.70	0.17	.9944809	35.0	7 56 12.18	
22	326	240 22 51.2	21 51.1	151.76	0.21	.9943975	34.5	7 52 16.27	
23	327	241 23 34.1	22 33.8	151.81	0.45	.9943152	34.0	7 48 20.36	
24	328	242 24 18.1	23 17.7	151.86	0.56	.9942340	33.5	7 44 24.45	
25	329	243 25 3.3	24 2.7	151.91	0.67	.9941541	32.9	7 40 28.54	
26	330	244 25 49.6	24 48.8	151.95	0.76	.9940756	32.3	7 36 32.63	
27	331	245 26 36.9	25 36.0	151.99	0.82	.9939986	31.7	7 32 36.71	
28	332	246 27 25.1	26 24.1	152.03	0.84	.9939232	31.0	7 28 40.79	
29	333	247 28 14.2	27 13.0	152.07	0.84	.9938496	30.2	7 24 44.89	
30	334	248 29 4.2	28 2.8	152.10	0.80	.9937780	29.3	7 20 48.98	
31	335	249 29 55.0	28 53.4	152.14	+0.74	9.9937085	-28.4	7 16 53.07	
NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0 ^h .0.									Diff. for 1 hour, — 9 ^s .8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.

SEMI-DIAMETER.

HORIZONTAL PARALLAX.

MERIDIAN PASSAGE.

AGE.

Noon.

Midnight.

Noon.

Diff. for
1 hour.

Midnight.

Diff. for
1 hour.Diff. for
1 hour.

Noon.

Day of the Month.	SEMI-DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.			
1	16 11.2	16 10.4	59 17.8	-0.19	59 14.7	-0.34	^h 8 ^m 10.0	^m 2.10	^d 9.4
2	16 9.0	16 7.2	59 9.8	0.49	59 3.1	0.64	9 0.3	2.10	10.4
3	16 4.9	16 2.0	58 54.6	0.79	58 44.1	0.95	9 51.1	2.13	11.4
4	15 58.7	15 54.8	58 31.8	1.10	58 17.7	1.24	10 42.8	2.18	12.4
5	15 50.6	15 46.0	58 2.1	1.36	57 45.1	1.47	11 35.7	2.22	13.4
6	15 41.0	15 35.8	57 26.9	1.55	57 7.9	1.61	12 29.4	2.24	14.4
7	15 30.5	15 25.1	56 48.3	1.64	56 28.5	1.63	13 23.3	2.23	15.4
8	15 19.8	15 14.6	56 9.0	1.60	55 50.0	1.54	14 16.3	2.17	16.4
9	15 9.7	15 5.1	55 32.0	1.45	55 15.2	1.33	15 7.5	2.08	17.4
10	15 1.0	14 57.3	54 59.9	1.19	54 46.4	1.03	15 56.3	1.98	18.4
11	14 54.2	14 51.7	54 35.0	0.85	54 25.9	0.66	16 42.6	1.88	19.4
12	14 49.9	14 48.7	54 19.1	0.46	54 14.9	-0.24	17 26.8	1.80	20.4
13	14 48.3	14 48.6	54 13.3	-0.02	54 14.3	+0.19	18 9.4	1.75	21.4
14	14 49.5	14 51.3	54 17.9	+0.41	54 24.2	0.63	18 51.2	1.74	22.4
15	14 53.7	14 56.8	54 33.1	0.84	54 44.4	1.04	19 33.1	1.76	23.4
16	15 0.5	15 4.7	54 58.0	1.22	55 13.7	1.38	20 16.0	1.82	24.4
17	15 9.5	15 14.7	55 31.2	1.52	55 50.3	1.64	21 0.9	1.93	25.4
18	15 20.2	15 25.9	56 10.5	1.72	56 31.6	1.78	21 48.6	2.06	26.4
19	15 31.8	15 37.7	56 53.1	1.80	57 14.7	1.78	22 39.7	2.21	27.4
20	15 43.5	15 49.0	57 36.0	1.73	57 56.3	1.64	23 34.5	2.35	28.4
21	15 54.2	15 59.0	58 15.5	1.53	58 33.1	1.39	6		29.4
22	16 3.3	16 7.0	58 48.9	1.22	59 2.4	1.03	0 32.3	2.44	0.9
23	16 10.1	16 12.5	59 13.7	0.83	59 22.5	0.62	1 31.8	2.48	1.9
24	16 14.2	16 15.3	59 28.8	0.41	59 32.7	+0.23	2 31.1	2.45	2.9
25	16 15.7	16 15.6	59 34.4	+0.05	59 33.9	-0.13	3 28.8	2.35	3.9
26	16 14.9	16 13.8	59 31.4	-0.28	59 27.3	0.41	4 24.0	2.24	4.9
27	16 12.2	16 10.4	59 21.6	0.52	59 14.7	0.62	5 16.6	2.14	5.9
28	16 8.1	16 5.7	59 6.6	0.71	58 57.6	0.78	6 7.2	2.08	6.9
29	16 3.1	16 0.3	58 47.9	0.84	58 37.6	0.89	6 56.7	2.05	7.9
30	15 57.3	15 54.1	58 26.6	0.95	58 14.9	1.00	7 46.1	2.07	8.9
31	15 50.7	15 47.3	58 2.7	1.04	57 50.0	1.08	8 36.1	2.11	9.9
32	15 43.7	15 39.9	57 36.8	-1.13	57 23.0	-1.17	9 27.2	2.16	10.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 1.					THURSDAY 3.				
0	22 37 3.34	2.1992	S. 3° 7' 4.0"	13.957	0	0 22 23.81	2.9087	N. 7° 24' 13.4"	12.548
1	22 39 15.26	2.1992	2 53 48.1	13.973	1	0 24 36.37	2.9100	7 36 44.9	12.562
2	22 41 27.12	2.1972	2 40 31.3	13.987	2	0 26 49.01	2.9112	7 49 13.6	12.545
3	22 43 38.92	2.1963	2 27 13.7	13.990	3	0 29 1.72	2.9125	8 1 39.4	12.406
4	22 45 50.67	2.1955	2 13 55.3	13.912	4	0 31 14.51	2.9139	8 14 2.3	12.356
5	22 48 2.38	2.1947	2 0 36.2	13.923	5	0 33 27.39	2.9154	8 26 22.1	12.304
6	22 50 14.04	2.1940	1 47 16.5	13.932	6	0 35 40.36	2.9169	8 38 38.6	12.252
7	22 52 25.66	2.1933	1 33 56.3	13.940	7	0 37 53.42	2.9184	8 50 52.3	12.198
8	22 54 37.24	2.1927	1 20 35.7	13.947	8	0 40 6.57	2.9198	9 3 2.5	12.143
9	22 56 48.79	2.1922	1 7 14.7	13.953	9	0 42 19.80	2.9213	9 15 9.4	12.087
10	22 59 0.31	2.1917	0 53 53.4	13.957	10	0 44 33.13	2.9229	9 27 12.9	12.029
11	23 1 11.79	2.1911	0 40 31.9	13.959	11	0 46 46.55	2.9245	9 39 12.9	11.970
12	23 3 23.24	2.1907	0 27 10.3	13.961	12	0 49 0.07	2.9262	9 51 9.3	11.910
13	23 5 34.67	2.1904	0 13 48.6	13.961	13	0 51 13.69	2.9278	10 3 2.1	11.849
14	23 7 46.09	2.1902	S. 0 0 27.0	13.959	14	0 53 27.41	2.9294	10 14 51.2	11.787
15	23 9 57.49	2.1899	N. 0 12 54.5	13.957	15	0 55 41.22	2.9311	10 26 36.5	11.723
16	23 12 8.87	2.1897	0 26 15.8	13.953	16	0 57 55.14	2.9328	10 38 18.0	11.659
17	23 14 20.25	2.1896	0 39 36.9	13.948	17	1 0 9.16	2.9346	10 49 55.6	11.593
18	23 16 31.62	2.1894	0 52 57.6	13.942	18	1 2 23.29	2.9363	11 1 29.1	11.525
19	23 18 42.98	2.1893	1 6 17.9	13.934	19	1 4 37.52	2.9381	11 12 58.6	11.457
20	23 20 54.34	2.1894	1 19 37.7	13.925	20	1 6 51.86	2.9398	11 24 24.0	11.387
21	23 23 5.71	2.1895	1 32 56.9	13.915	21	1 9 6.30	2.9416	11 35 45.1	11.317
22	23 25 17.08	2.1896	1 46 15.5	13.904	22	1 11 20.85	2.9434	11 47 2.0	11.246
23	23 27 28.46	2.1897	N. 1 59 33.4	13.891	23	1 13 35.51	2.9452	N. 11 58 14.6	11.173
WEDNESDAY 2.					FRIDAY 4.				
0	23 29 39.84	2.1899	N. 2 12 50.4	13.876	0	1 15 50.28	2.9471	N. 12 9 22.8	11.099
1	23 31 51.24	2.1902	2 26 6.5	13.881	1	1 18 5.16	2.9489	12 20 26.5	11.033
2	23 34 2.66	2.1905	2 39 21.7	13.845	2	1 20 20.15	2.9508	12 31 25.6	10.947
3	23 36 14.10	2.1908	2 52 35.9	13.827	3	1 22 35.25	2.9527	12 42 20.2	10.871
4	23 38 25.56	2.1912	3 5 48.9	13.807	4	1 24 50.47	2.9546	12 53 10.1	10.792
5	23 40 37.05	2.1917	3 19 0.7	13.786	5	1 27 5.80	2.9564	13 3 55.2	10.712
6	23 42 48.57	2.1922	3 32 11.2	13.764	6	1 29 21.24	2.9583	13 14 35.5	10.631
7	23 45 0.12	2.1927	3 45 20.4	13.741	7	1 31 36.79	2.9602	13 25 10.9	10.549
8	23 47 11.70	2.1933	3 58 28.1	13.716	8	1 33 52.46	2.9621	13 35 41.4	10.467
9	23 49 23.32	2.1940	4 11 34.3	13.690	9	1 36 8.24	2.9639	13 46 6.9	10.383
10	23 51 34.98	2.1947	4 24 38.9	13.663	10	1 38 24.13	2.9658	13 56 27.4	10.298
11	23 53 46.68	2.1953	4 37 41.9	13.635	11	1 40 40.14	2.9677	14 6 42.7	10.212
12	23 55 58.42	2.1961	4 50 43.1	13.605	12	1 42 56.26	2.9696	14 16 52.8	10.124
13	23 58 10.21	2.1969	5 3 42.5	12.974	13	1 45 12.49	2.9715	14 26 57.6	10.036
14	0 0 22.05	2.1978	5 16 40.0	12.942	14	1 47 28.84	2.9734	14 36 57.1	9.947
15	0 2 33.95	2.1988	5 29 35.5	12.908	15	1 49 45.30	2.9752	14 46 51.3	9.857
16	0 4 45.91	2.1997	5 42 29.0	12.873	16	1 52 1.87	2.9771	14 56 40.0	9.766
17	0 6 57.92	2.2007	5 55 20.3	12.837	17	1 54 18.55	2.9789	15 6 23.2	9.674
18	0 9 9.99	2.2017	6 8 9.4	12.799	18	1 56 35.34	2.9808	15 16 0.9	9.582
19	0 11 22.13	2.2028	6 20 56.2	12.761	19	1 58 52.25	2.9827	15 25 33.0	9.487
20	0 13 34.33	2.2038	6 33 40.7	12.721	20	2 1 9.26	2.9844	15 34 59.4	9.393
21	0 15 46.59	2.2049	6 46 22.7	12.679	21	2 3 26.38	2.9862	15 44 20.0	9.298
22	0 17 58.92	2.2061	6 59 2.2	12.637	22	2 5 43.61	2.9880	15 53 34.9	9.199
23	0 20 11.33	2.2074	7 11 39.1	12.593	23	2 8 0.94	2.9897	16 2 43.9	9.101
24	0 22 23.81	2.2087	N. 7 24 13.4	12.548	24	2 10 18.38	2.9915	N. 16 11 47.0	9.002

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 5.					MONDAY 7.				
0	2 10 18.38	2.9915	N.16° 11' 47".0	9.002	0	4 1 39.99	2.3303	N.21° 16' 32".1	3.495
1	2 12 35.92	2.9932	16 20 44.2	8.903	1	4 3 59.79	2.3297	21 19 58.1	3.372
2	2 14 53.57	2.9950	16 29 35.4	8.802	2	4 6 19.55	2.3290	21 23 16.7	3.248
3	2 17 11.32	2.9967	16 38 20.5	8.701	3	4 8 39.27	2.3283	21 26 27.9	3.124
4	2 19 29.17	2.9983	16 46 59.5	8.599	4	4 10 58.95	2.3276	21 29 31.6	2.999
5	2 21 47.12	2.3000	16 55 32.3	8.496	5	4 13 18.58	2.3268	21 32 27.8	2.875
6	2 24 5.17	2.3016	17 3 59.0	8.392	6	4 15 38.16	2.3259	21 35 16.6	2.751
7	2 26 23.31	2.3032	17 12 19.4	8.287	7	4 17 57.69	2.3250	21 37 57.9	2.627
8	2 28 41.55	2.3047	17 20 33.5	8.182	8	4 20 17.16	2.3240	21 40 31.8	2.503
9	2 30 59.88	2.3063	17 28 41.3	8.077	9	4 22 36.57	2.3229	21 42 58.3	2.379
10	2 33 18.30	2.3077	17 36 42.7	7.969	10	4 24 55.91	2.3218	21 45 17.3	2.255
11	2 35 36.81	2.3092	17 44 37.6	7.861	11	4 27 15.18	2.3206	21 47 28.9	2.131
12	2 37 55.40	2.3106	17 52 26.0	7.752	12	4 29 34.38	2.3193	21 49 33.0	2.007
13	2 40 14.08	2.3120	18 0 7.9	7.643	13	4 31 53.50	2.3180	21 51 29.7	1.883
14	2 42 32.84	2.3133	18 7 43.2	7.533	14	4 34 12.54	2.3166	21 53 19.0	1.760
15	2 44 51.68	2.3147	18 15 11.9	7.423	15	4 36 31.49	2.3152	21 55 0.9	1.637
16	2 47 10.60	2.3160	18 22 34.0	7.312	16	4 38 50.36	2.3137	21 56 35.4	1.513
17	2 49 29.60	2.3172	18 29 49.4	7.200	17	4 41 9.13	2.3120	21 58 2.5	1.390
18	2 51 48.67	2.3184	18 36 58.0	7.087	18	4 43 27.80	2.3103	21 59 22.2	1.267
19	2 54 7.81	2.3196	18 43 59.9	6.974	19	4 45 46.37	2.3086	22 0 34.6	1.145
20	2 56 27.02	2.3207	18 50 54.9	6.860	20	4 48 4.83	2.3069	22 1 39.6	1.022
21	2 58 46.29	2.3217	18 57 43.1	6.746	21	4 50 23.19	2.3051	22 2 37.2	0.899
22	3 1 5.63	2.3227	19 4 24.4	6.631	22	4 52 41.44	2.3032	22 3 27.5	0.777
23	3 3 25.02	2.3237	N.19 10 58.8	6.515	23	4 54 59.57	2.3011	N.22 4 10.5	0.656
SUNDAY 6.					TUESDAY 8.				
0	3 5 44.47	2.3247	N.19 17 26.2	6.398	0	4 57 17.57	2.2990	N.22 4 46.2	0.534
1	3 8 3.98	2.3255	19 23 46.6	6.282	1	4 59 35.45	2.2979	22 5 14.6	0.413
2	3 10 23.53	2.3263	19 30 0.0	6.166	2	5 1 53.20	2.2968	22 5 35.8	0.293
3	3 12 43.13	2.3271	19 36 6.5	6.049	3	5 4 10.83	2.2956	22 5 49.8	0.172
4	3 15 2.78	2.3278	19 42 5.9	5.930	4	5 6 28.32	2.2943	22 5 56.5	+0.052
5	3 17 22.47	2.3285	19 47 58.1	5.811	5	5 8 45.67	2.2930	22 5 56.0	-0.067
6	3 19 42.20	2.3292	19 53 43.2	5.692	6	5 11 2.88	2.2916	22 5 48.4	0.187
7	3 22 1.97	2.3297	19 59 21.1	5.573	7	5 13 19.94	2.2901	22 5 33.6	0.306
8	3 24 21.77	2.3302	20 4 51.9	5.453	8	5 15 36.85	2.2886	22 5 11.7	0.424
9	3 26 41.59	2.3306	20 10 15.5	5.332	9	5 17 53.61	2.2781	22 4 42.7	0.542
10	3 29 1.44	2.3310	20 15 31.8	5.212	10	5 20 10.22	2.2755	22 4 6.6	0.660
11	3 31 21.31	2.3313	20 20 40.9	5.092	11	5 22 26.67	2.2737	22 3 23.5	0.777
12	3 33 41.20	2.3317	20 25 42.8	4.971	12	5 24 42.95	2.2699	22 2 33.4	0.893
13	3 36 1.11	2.3319	20 30 37.4	4.849	13	5 26 59.06	2.2672	22 1 36.3	1.010
14	3 38 21.03	2.3320	20 35 24.6	4.726	14	5 29 15.01	2.2644	22 0 32.2	1.127
15	3 40 40.95	2.3321	20 40 4.5	4.604	15	5 31 30.79	2.2615	21 59 21.1	1.242
16	3 43 0.88	2.3322	20 44 37.1	4.482	16	5 33 46.39	2.2586	21 58 3.2	1.356
17	3 45 20.81	2.3321	20 49 2.3	4.359	17	5 36 1.82	2.2557	21 56 38.4	1.471
18	3 47 40.73	2.3320	20 53 20.2	4.237	18	5 38 17.07	2.2528	21 55 6.7	1.585
19	3 50 0.65	2.3318	20 57 30.7	4.113	19	5 40 32.13	2.2496	21 53 28.2	1.698
20	3 52 20.55	2.3316	21 1 33.8	3.990	20	5 42 47.01	2.2464	21 51 42.9	1.811
21	3 54 40.44	2.3313	21 5 29.5	3.867	21	5 45 1.70	2.2432	21 49 50.9	1.923
22	3 57 0.31	2.3310	21 9 17.8	3.743	22	5 47 16.20	2.2400	21 47 52.1	2.035
23	3 59 20.16	2.3307	21 12 58.7	3.619	23	5 49 30.50	2.2367	21 45 46.7	2.146
24	4 1 39.99	2.3303	N.21 16 32.1	3.495	24	5 51 44.61	2.2335	N.21 43 34.6	2.257

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 9.					FRIDAY 11.				
0	5 51 44.61	2.9335	N.21° 43' 34.6"	2.957	0	7 34 39.81	2.0508	N.18° 0' 21.5"	6.775
1	5 53 58.52	2.9309	21 41 15.9	2.367	1	7 36 42.73	2.0467	17 53 32.7	6.851
2	5 56 12.23	2.9268	21 38 50.6	2.476	2	7 38 45.42	2.0429	17 46 39.4	6.926
3	5 58 25.73	2.9233	21 36 18.8	2.584	3	7 40 47.88	2.0391	17 39 41.6	7.001
4	6 0 39.03	2.9199	21 33 40.5	2.693	4	7 42 50.11	2.0353	17 32 39.3	7.075
5	6 2 52.12	2.9164	21 30 55.7	2.801	5	7 44 52.12	2.0316	17 25 32.6	7.149
6	6 5 5.00	2.9129	21 28 4.4	2.908	6	7 46 53.90	2.0278	17 18 21.4	7.223
7	6 7 17.67	2.9093	21 25 6.7	3.014	7	7 48 55.46	2.0241	17 11 5.9	7.294
8	6 9 30.12	2.9057	21 22 2.7	3.119	8	7 50 56.79	2.0203	17 3 46.1	7.367
9	6 11 42.36	2.9022	21 18 52.4	3.224	9	7 52 57.90	2.0167	16 56 21.9	7.438
10	6 13 54.38	2.1985	21 15 35.8	3.329	10	7 54 58.79	2.0130	16 48 53.5	7.508
11	6 16 6.18	2.1949	21 12 12.9	3.432	11	7 56 59.46	2.0093	16 41 21.0	7.577
12	6 18 17.77	2.1919	21 8 43.9	3.534	12	7 58 59.91	2.0057	16 33 44.3	7.646
13	6 20 29.13	2.1875	21 5 8.8	3.637	13	8 1 0.15	2.0022	16 26 3.5	7.713
14	6 22 40.27	2.1837	21 1 27.5	3.740	14	8 3 0.17	1.9986	16 18 18.7	7.781
15	6 24 51.18	2.1799	20 57 40.0	3.842	15	8 4 59.98	1.9951	16 10 29.8	7.848
16	6 27 1.86	2.1762	20 53 46.5	3.941	16	8 6 59.58	1.9916	16 2 36.9	7.914
17	6 29 12.32	2.1724	20 49 47.1	4.040	17	8 8 58.97	1.9882	15 54 40.1	7.979
18	6 31 22.55	2.1686	20 45 41.7	4.139	18	8 10 58.16	1.9847	15 46 39.4	8.043
19	6 33 32.55	2.1647	20 41 30.4	4.237	19	8 12 57.14	1.9813	15 38 34.9	8.108
20	6 35 42.31	2.1608	20 37 13.2	4.335	20	8 14 55.92	1.9779	15 30 26.5	8.172
21	6 37 51.84	2.1569	20 32 50.2	4.432	21	8 16 54.49	1.9745	15 22 14.3	8.234
22	6 40 1.14	2.1531	20 28 21.4	4.528	22	8 18 52.86	1.9713	15 13 58.4	8.296
23	6 42 10.21	2.1492	N.20° 23' 46.8"	4.624	23	8 20 51.04	1.9681	N.15° 5' 38.8"	8.357
THURSDAY 10.					SATURDAY 12.				
0	6 44 19.04	2.1452	N.20° 19' 6.5"	4.718	0	8 22 49.03	1.9648	N.14° 57' 15.6"	8.417
1	6 46 27.64	2.1413	20 14 20.6	4.812	1	8 24 46.82	1.9616	14 48 48.8	8.477
2	6 48 36.00	2.1373	20 9 29.1	4.906	2	8 26 44.42	1.9584	14 40 18.4	8.537
3	6 50 44.12	2.1333	20 4 31.9	4.999	3	8 28 41.83	1.9552	14 31 44.4	8.596
4	6 52 52.00	2.1294	19 59 29.2	5.090	4	8 30 39.05	1.9522	14 23 6.9	8.653
5	6 54 59.65	2.1255	19 54 21.1	5.181	5	8 32 36.09	1.9492	14 14 26.0	8.710
6	6 57 7.06	2.1215	19 49 7.5	5.272	6	8 34 32.95	1.9462	14 5 41.7	8.767
7	6 59 14.23	2.1175	19 43 48.5	5.361	7	8 36 29.63	1.9432	13 56 54.0	8.823
8	7 1 21.16	2.1136	19 38 24.2	5.450	8	8 38 26.13	1.9402	13 48 3.0	8.878
9	7 3 27.86	2.1097	19 32 54.5	5.539	9	8 40 22.45	1.9373	13 39 8.6	8.933
10	7 5 34.32	2.1057	19 27 19.5	5.628	10	8 42 18.60	1.9344	13 30 11.0	8.987
11	7 7 40.54	2.1017	19 21 39.3	5.712	11	8 44 14.58	1.9316	13 21 10.2	9.040
12	7 9 46.52	2.0977	19 15 54.0	5.798	12	8 46 10.39	1.9288	13 12 6.2	9.092
13	7 11 52.26	2.0937	19 10 3.5	5.884	13	8 48 6.03	1.9261	13 2 59.1	9.144
14	7 13 57.76	2.0897	19 4 7.9	5.968	14	8 50 1.52	1.9235	12 53 48.9	9.196
15	7 16 3.03	2.0858	18 58 7.3	6.052	15	8 51 56.85	1.9208	12 44 35.5	9.248
16	7 18 8.06	2.0818	18 52 1.7	6.135	16	8 53 52.02	1.9182	12 35 19.1	9.298
17	7 20 12.85	2.0779	18 45 51.1	6.218	17	8 55 47.04	1.9157	12 25 59.7	9.348
18	7 22 17.41	2.0740	18 39 35.5	6.300	18	8 57 41.90	1.9131	12 16 37.4	9.397
19	7 24 21.73	2.0700	18 33 15.1	6.380	19	8 59 36.61	1.9107	12 7 12.1	9.445
20	7 26 25.81	2.0661	18 26 49.9	6.460	20	9 1 31.18	1.9082	11 57 44.0	9.493
21	7 28 29.66	2.0622	18 20 19.9	6.539	21	9 3 25.60	1.9058	11 48 13.0	9.540
22	7 30 33.28	2.0583	18 13 45.2	6.618	22	9 5 19.88	1.9035	11 38 39.2	9.587
23	7 32 36.66	2.0544	18 7 5.7	6.697	23	9 7 14.02	1.9013	11 29 2.6	9.633
24	7 34 39.81	2.0506	N.18° 0' 21.5"	6.775	24	9 9 8.03	1.8991	N.11° 19' 23.2"	9.679

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 13.					TUESDAY 15.				
0	9 9 8.03	1.8901	N. 11° 19' 23.2"	9.679	0	10 38 42.49	1.8545	N. 2° 53' 30.1"	11.181
1	9 11 1.91	1.8909	11 9 41.1	9.734	1	10 40 33.77	1.8549	2 42 18.7	11.198
2	9 12 55.66	1.8947	10 59 56.4	9.768	2	10 42 25.08	1.8554	2 31 6.3	11.215
3	9 14 49.27	1.8986	10 50 9.0	9.812	3	10 44 16.42	1.8560	2 19 52.9	11.232
4	9 16 42.76	1.8996	10 40 19.0	9.854	4	10 46 7.80	1.8567	2 8 38.5	11.247
5	9 18 36.14	1.8987	10 30 26.5	9.896	5	10 47 59.22	1.8574	1 57 23.2	11.262
6	9 20 29.40	1.8987	10 20 31.5	9.937	6	10 49 50.69	1.8582	1 46 7.1	11.276
7	9 22 22.54	1.8948	10 10 34.0	9.979	7	10 51 42.20	1.8590	1 34 50.1	11.290
8	9 24 15.57	1.8930	10 0 34.0	10.021	8	10 53 33.77	1.8599	1 23 32.3	11.303
9	9 26 8.50	1.8912	9 50 31.5	10.063	9	10 55 25.39	1.8603	1 12 13.8	11.315
10	9 28 1.32	1.8796	9 40 26.6	10.101	10	10 57 17.07	1.8618	1 0 54.5	11.327
11	9 29 54.04	1.8778	9 30 19.4	10.139	11	10 59 8.81	1.8628	0 49 34.5	11.338
12	9 31 46.66	1.8762	9 20 9.9	10.177	12	11 1 0.61	1.8639	0 38 13.9	11.349
13	9 33 39.19	1.8747	9 9 58.1	10.215	13	11 2 52.48	1.8652	0 26 52.6	11.359
14	9 35 31.62	1.8731	8 59 44.1	10.253	14	11 4 44.43	1.8665	0 15 30.8	11.368
15	9 37 23.96	1.8716	8 49 27.8	10.289	15	11 6 36.46	1.8678	N. 0 4 8.4	11.377
16	9 39 16.21	1.8702	8 39 9.4	10.325	16	11 8 28.57	1.8692	S. 0 7 14.5	11.386
17	9 41 8.38	1.8688	8 28 48.8	10.361	17	11 10 20.76	1.8706	0 18 37.9	11.393
18	9 43 0.47	1.8675	8 18 26.1	10.396	18	11 12 13.04	1.8721	0 30 1.7	11.400
19	9 44 52.48	1.8663	8 8 1.3	10.430	19	11 14 5.41	1.8737	0 41 25.9	11.407
20	9 46 44.42	1.8651	7 57 34.5	10.463	20	11 15 57.88	1.8752	0 52 50.5	11.412
21	9 48 36.29	1.8639	7 47 5.7	10.497	21	11 17 50.44	1.8768	1 4 15.4	11.417
22	9 50 28.09	1.8628	7 36 34.9	10.530	22	11 19 43.10	1.8786	1 15 40.5	11.421
23	9 52 19.83	1.8618	N. 7 26 2.1	10.562	23	11 21 35.87	1.8805	S. 1 27 5.9	11.425
MONDAY 14.					WEDNESDAY 16.				
0	9 54 11.51	1.8608	N. 7 15 27.4	10.594	0	11 23 28.76	1.8894	S. 1 38 31.5	11.428
1	9 56 3.13	1.8599	7 4 50.8	10.625	1	11 25 21.76	1.8843	1 49 57.3	11.430
2	9 57 54.70	1.8591	6 54 12.4	10.655	2	11 27 14.88	1.8863	2 1 23.1	11.431
3	9 59 46.22	1.8583	6 43 32.2	10.685	3	11 29 8.12	1.8883	2 12 49.0	11.432
4	10 1 37.69	1.8575	6 32 50.2	10.714	4	11 31 1.48	1.8903	2 24 15.0	11.432
5	10 3 29.12	1.8568	6 22 6.5	10.743	5	11 32 54.96	1.8924	2 35 40.9	11.432
6	10 5 20.50	1.8561	6 11 21.1	10.771	6	11 34 48.57	1.8947	2 47 6.8	11.431
7	10 7 11.85	1.8556	6 0 34.0	10.798	7	11 36 42.32	1.8970	2 58 32.6	11.429
8	10 9 3.17	1.8551	5 49 45.3	10.825	8	11 38 36.21	1.8994	3 9 58.3	11.427
9	10 10 54.46	1.8546	5 38 55.0	10.852	9	11 40 30.25	1.9019	3 21 23.8	11.423
10	10 12 45.72	1.8541	5 28 3.1	10.878	10	11 42 24.44	1.9043	3 32 49.1	11.419
11	10 14 36.95	1.8537	5 17 9.6	10.904	11	11 44 18.77	1.9068	3 44 14.1	11.414
12	10 16 28.16	1.8534	5 6 14.6	10.929	12	11 46 13.25	1.9094	3 55 38.8	11.409
13	10 18 19.36	1.8532	4 55 18.2	10.952	13	11 48 7.89	1.9121	4 7 3.2	11.402
14	10 20 10.55	1.8531	4 44 20.3	10.976	14	11 50 2.70	1.9148	4 18 27.1	11.395
15	10 22 1.73	1.8529	4 33 21.0	10.999	15	11 51 57.67	1.9176	4 29 50.6	11.387
16	10 23 52.90	1.8528	4 22 20.4	11.022	16	11 53 52.81	1.9204	4 41 13.6	11.379
17	10 25 44.07	1.8528	4 11 18.4	11.044	17	11 55 48.12	1.9232	4 52 36.1	11.370
18	10 27 35.24	1.8528	4 0 15.1	11.065	18	11 57 43.60	1.9262	5 3 58.0	11.359
19	10 29 26.42	1.8530	3 49 10.6	11.086	19	11 59 39.26	1.9292	5 15 19.2	11.348
20	10 31 17.60	1.8531	3 38 4.8	11.107	20	12 1 35.11	1.9323	5 26 39.8	11.337
21	10 33 8.79	1.8533	3 26 57.8	11.126	21	12 3 31.14	1.9354	5 37 59.7	11.325
22	10 35 0.00	1.8537	3 15 49.7	11.144	22	12 5 27.36	1.9387	5 49 18.8	11.311
23	10 36 51.23	1.8541	3 4 40.5	11.163	23	12 7 23.78	1.9420	6 0 37.0	11.297
24	10 38 42.49	1.8545	N. 2 53 30.1	11.181	24	12 9 20.40	1.9453	S. 6 11 54.4	11.283

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 17.					SATURDAY 19.				
0	12 9 20.40	1.9453	S. 6 11 54.4	11.283	0	13 47 32.81	2.1647	S. 14 38 42.1	9.439
1	12 11 17.22	1.9487	6 23 10.9	11.267	1	13 49 42.86	2.1703	14 48 6.5	9.375
2	12 13 14.24	1.9530	6 34 26.4	11.249	2	13 51 53.25	2.1759	14 57 27.1	9.310
3	12 15 11.46	1.9554	6 45 40.8	11.233	3	13 54 3.97	2.1815	15 6 43.7	9.242
4	12 17 8.89	1.9590	6 56 54.2	11.214	4	13 56 15.03	2.1873	15 15 56.2	9.173
5	12 19 6.54	1.9627	7 8 6.5	11.195	5	13 58 26.43	2.1938	15 25 4.5	9.103
6	12 21 4.41	1.9663	7 19 17.6	11.174	6	14 0 38.17	2.1965	15 34 8.6	9.039
7	12 23 2.50	1.9700	7 30 27.4	11.153	7	14 2 50.25	2.2042	15 43 8.4	8.960
8	12 25 0.81	1.9738	7 41 36.0	11.133	8	14 5 2.67	2.2098	15 52 3.8	8.886
9	12 26 59.35	1.9776	7 52 43.3	11.110	9	14 7 15.43	2.2155	16 0 54.7	8.811
10	12 28 58.12	1.9815	8 3 49.2	11.086	10	14 9 28.53	2.2212	16 9 41.1	8.735
11	12 30 57.13	1.9854	8 14 53.6	11.062	11	14 11 41.98	2.2270	16 18 22.9	8.658
12	12 32 56.37	1.9893	8 25 56.6	11.037	12	14 13 55.77	2.2337	16 27 0.1	8.580
13	12 34 55.85	1.9934	8 36 58.0	11.010	13	14 16 9.90	2.2384	16 35 32.5	8.499
14	12 36 55.58	1.9976	8 47 57.8	10.982	14	14 18 24.38	2.2442	16 44 0.0	8.417
15	12 38 55.56	2.0017	8 58 55.9	10.954	15	14 20 39.21	2.2500	16 52 22.6	8.335
16	12 40 55.79	2.0059	9 9 52.3	10.925	16	14 22 54.38	2.2558	17 0 40.2	8.252
17	12 42 56.27	2.0102	9 20 46.9	10.894	17	14 25 9.90	2.2616	17 8 52.8	8.168
18	12 44 57.01	2.0145	9 31 39.6	10.863	18	14 27 25.77	2.2673	17 17 0.3	8.083
19	12 46 58.01	2.0188	9 42 30.4	10.831	19	14 29 41.98	2.2731	17 25 2.6	7.994
20	12 48 59.27	2.0233	9 53 19.3	10.799	20	14 31 58.54	2.2788	17 32 59.6	7.904
21	12 51 0.80	2.0277	10 4 6.3	10.766	21	14 34 15.44	2.2845	17 40 51.1	7.813
22	12 53 2.60	2.0322	10 14 51.2	10.730	22	14 36 32.68	2.2902	17 48 37.2	7.722
23	12 55 4.67	2.0367	S. 10 25 33.9	10.693	23	14 38 50.27	2.2960	S. 17 56 17.8	7.631
FRIDAY 18.					SUNDAY 20.				
0	12 57 7.01	2.0414	S. 10 36 14.4	10.656	0	14 41 8.20	2.3017	S. 18 3 52.9	7.537
1	12 59 9.63	2.0461	10 46 52.6	10.618	1	14 43 26.47	2.3074	18 11 22.3	7.449
2	13 1 12.54	2.0508	10 57 28.6	10.580	2	14 45 45.03	2.3131	18 18 46.0	7.346
3	13 3 15.73	2.0555	11 8 2.2	10.539	3	14 48 4.04	2.3188	18 26 3.8	7.248
4	13 5 19.20	2.0603	11 18 33.3	10.498	4	14 50 23.34	2.3244	18 33 15.7	7.149
5	13 7 22.97	2.0652	11 29 1.9	10.456	5	14 52 42.97	2.3300	18 40 21.7	7.049
6	13 9 27.03	2.0702	11 39 28.0	10.413	6	14 55 2.94	2.3356	18 47 21.6	6.947
7	13 11 31.39	2.0751	11 49 51.4	10.368	7	14 57 23.24	2.3412	18 54 15.4	6.845
8	13 13 36.04	2.0800	12 0 12.1	10.323	8	14 59 43.88	2.3467	19 1 3.0	6.742
9	13 15 40.99	2.0850	12 10 30.1	10.277	9	15 2 4.85	2.3523	19 7 44.4	6.638
10	13 17 46.24	2.0901	12 20 45.3	10.228	10	15 4 26.15	2.3577	19 14 19.5	6.532
11	13 19 51.80	2.0952	12 30 57.5	10.178	11	15 6 47.78	2.3633	19 20 48.2	6.423
12	13 21 57.66	2.1003	12 41 6.7	10.128	12	15 9 9.73	2.3686	19 27 10.3	6.314
13	13 24 3.83	2.1055	12 51 12.9	10.078	13	15 11 32.01	2.3740	19 33 25.9	6.205
14	13 26 10.32	2.1107	13 1 16.1	10.027	14	15 13 54.61	2.3793	19 39 34.9	6.094
15	13 28 17.12	2.1160	13 11 16.1	9.973	15	15 16 17.52	2.3845	19 45 37.2	5.982
16	13 30 24.24	2.1213	13 21 12.8	9.918	16	15 18 40.75	2.3897	19 51 32.7	5.868
17	13 32 31.68	2.1266	13 31 6.3	9.863	17	15 21 4.29	2.3949	19 57 21.4	5.754
18	13 34 39.43	2.1319	13 40 56.4	9.806	18	15 23 28.14	2.4001	20 3 3.2	5.638
19	13 36 47.51	2.1374	13 50 43.0	9.748	19	15 25 52.30	2.4052	20 8 38.0	5.522
20	13 38 55.92	2.1428	14 0 26.1	9.689	20	15 28 16.76	2.4102	20 14 5.8	5.403
21	13 41 4.65	2.1482	14 10 5.7	9.629	21	15 30 41.52	2.4152	20 19 26.4	5.283
22	13 43 13.71	2.1537	14 19 41.6	9.568	22	15 33 6.57	2.4201	20 24 39.8	5.164
23	13 45 23.10	2.1592	14 29 13.8	9.504	23	15 35 31.93	2.4250	20 29 46.1	5.044
24	13 47 32.81	2.1647	S. 14 38 42.1	9.439	24	15 37 57.58	2.4298	S. 20 34 45.1	4.922

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 21.					WEDNESDAY 23.				
0	15 37 57.58	2.4896	S. 20° 34' 45.1"	4.922	0	17 38 29.81	2.5533	S. 21° 54' 4.3"	1.826
1	15 40 23.51	2.4345	20 39 36.7	4.798	1	17 41 3.01	2.5532	21 52 10.3	1.974
2	15 42 49.72	2.4399	20 44 20.8	4.673	2	17 43 36.20	2.5530	21 50 7.4	2.123
3	15 45 16.21	2.4438	20 48 57.4	4.547	3	17 46 9.37	2.5527	21 47 55.6	2.271
4	15 47 42.98	2.4483	20 53 26.4	4.420	4	17 48 42.52	2.5522	21 45 34.9	2.418
5	15 50 10.01	2.4538	20 57 47.8	4.293	5	17 51 15.64	2.5517	21 43 5.4	2.566
6	15 52 37.31	2.4571	21 2 1.6	4.166	6	17 53 48.72	2.5510	21 40 27.0	2.713
7	15 55 4.87	2.4614	21 6 7.7	4.036	7	17 56 21.76	2.5503	21 37 39.8	2.860
8	15 57 32.68	2.4657	21 10 5.9	3.904	8	17 58 54.75	2.5493	21 34 43.8	3.007
9	16 0 0.75	2.4699	21 13 56.2	3.773	9	18 1 27.68	2.5483	21 31 39.0	3.153
10	16 2 29.07	2.4739	21 17 38.6	3.641	10	18 4 0.55	2.5473	21 28 25.4	3.299
11	16 4 57.62	2.4778	21 21 13.1	3.508	11	18 6 33.36	2.5463	21 25 3.1	3.445
12	16 7 26.41	2.4817	21 24 39.6	3.374	12	18 9 6.09	2.5448	21 21 32.0	3.591
13	16 9 55.43	2.4856	21 27 58.0	3.239	13	18 11 38.74	2.5434	21 17 52.2	3.735
14	16 12 24.68	2.4893	21 31 8.3	3.103	14	18 14 11.30	2.5419	21 14 3.8	3.878
15	16 14 54.15	2.4929	21 34 10.4	2.967	15	18 16 43.77	2.5403	21 10 6.8	4.022
16	16 17 23.83	2.4964	21 37 4.3	2.830	16	18 19 16.14	2.5386	21 6 1.2	4.165
17	16 19 53.72	2.4998	21 39 50.0	2.693	17	18 21 48.40	2.5367	21 1 47.0	4.308
18	16 22 23.81	2.5032	21 42 27.4	2.553	18	18 24 20.55	2.5348	20 57 24.2	4.451
19	16 24 54.10	2.5064	21 44 56.4	2.413	19	18 26 52.58	2.5328	20 52 52.9	4.592
20	16 27 24.58	2.5096	21 47 17.0	2.273	20	18 29 24.49	2.5308	20 48 13.2	4.732
21	16 29 55.25	2.5127	21 49 29.2	2.133	21	18 31 56.28	2.5287	20 43 25.1	4.872
22	16 32 26.10	2.5158	21 51 32.9	1.991	22	18 34 27.94	2.5265	20 38 28.6	5.011
23	16 34 57.12	2.5184	S. 21° 53' 28.1"	1.848	23	18 36 59.46	2.5241	S. 20° 33' 23.8"	5.149
TUESDAY 22.					THURSDAY 24.				
0	16 37 28.31	2.5212	S. 21° 55' 14.7"	1.706	0	18 39 30.83	2.5216	S. 20° 28' 10.7"	5.287
1	16 39 59.66	2.5237	21 56 52.8	1.563	1	18 42 2.05	2.5191	20 22 49.3	5.424
2	16 42 31.16	2.5262	21 58 22.3	1.419	2	18 44 33.12	2.5165	20 17 19.8	5.559
3	16 45 2.81	2.5287	21 59 43.1	1.274	3	18 47 4.03	2.5138	20 11 42.2	5.694
4	16 47 34.60	2.5310	22 0 55.2	1.129	4	18 49 34.77	2.5110	20 5 56.5	5.829
5	16 50 6.53	2.5332	22 1 58.6	0.984	5	18 52 5.35	2.5089	20 0 2.7	5.963
6	16 52 38.59	2.5353	22 2 53.3	0.838	6	18 54 35.76	2.5063	19 54 0.9	6.096
7	16 55 10.77	2.5372	22 3 39.2	0.693	7	18 57 5.99	2.5033	19 47 51.2	6.227
8	16 57 43.06	2.5391	22 4 16.4	0.547	8	18 59 36.04	2.4999	19 41 33.6	6.357
9	17 0 15.46	2.5409	22 4 44.8	0.399	9	19 2 5.90	2.4961	19 35 8.3	6.487
10	17 2 47.97	2.5426	22 5 4.3	0.252	10	19 4 35.57	2.4929	19 28 35.2	6.617
11	17 5 20.57	2.5440	22 5 15.0	-0.104	11	19 7 5.05	2.4896	19 21 54.3	6.745
12	17 7 53.25	2.5454	22 5 16.8	+0.044	12	19 9 34.33	2.4863	19 15 5.8	6.872
13	17 10 26.01	2.5467	22 5 9.7	0.192	13	19 12 3.41	2.4830	19 8 9.7	6.997
14	17 12 58.85	2.5479	22 4 53.8	0.339	14	19 14 32.29	2.4796	19 1 6.1	7.122
15	17 15 31.76	2.5490	22 4 29.0	0.487	15	19 17 0.96	2.4761	18 53 55.1	7.245
16	17 18 4.73	2.5499	22 3 55.3	0.636	16	19 19 29.42	2.4725	18 46 36.7	7.368
17	17 20 37.75	2.5507	22 3 12.7	0.785	17	19 21 57.66	2.4689	18 39 10.9	7.490
18	17 23 10.82	2.5515	22 2 21.1	0.934	18	19 24 25.69	2.4653	18 31 37.9	7.610
19	17 25 43.93	2.5521	22 1 20.6	1.082	19	19 26 53.50	2.4616	18 23 57.7	7.730
20	17 28 17.07	2.5526	22 0 11.2	1.231	20	19 29 21.08	2.4578	18 16 10.3	7.848
21	17 30 50.23	2.5528	21 58 52.9	1.380	21	19 31 48.44	2.4541	18 8 15.9	7.965
22	17 33 23.41	2.5531	21 57 25.6	1.529	22	19 34 15.57	2.4503	18 0 14.5	8.081
23	17 35 56.61	2.5533	21 55 49.4	1.677	23	19 36 42.47	2.4465	17 52 6.2	8.195
24	17 38 29.81	2.5533	S. 21° 54' 4.3"	1.826	24	19 39 9.15	2.4427	S. 17° 43' 51.1"	8.308

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 25.					SUNDAY 27.				
0	19 39 9.15	2.4427	S. 17° 43' 51.1"	8.308	0	21 31 44.23	2.9531	S. 9° 18' 48.9"	12.219
1	19 41 35.59	2.4387	17 35 29.2	8.421	1	21 33 59.31	2.9498	9 6 34.3	12.267
2	19 44 1.79	2.4348	17 27 0.6	8.538	2	21 36 14.20	2.9465	8 54 16.9	12.313
3	19 46 27.76	2.4308	17 18 25.3	8.649	3	21 38 28.89	2.9433	8 41 56.7	12.359
4	19 48 53.49	2.4267	17 9 43.5	8.751	4	21 40 43.39	2.9401	8 29 33.8	12.404
5	19 51 18.97	2.4227	17 0 55.2	8.858	5	21 42 57.70	2.9368	8 17 8.2	12.447
6	19 53 44.21	2.4187	16 52 0.5	8.964	6	21 45 11.81	2.9337	8 4 40.1	12.489
7	19 56 9.21	2.4146	16 42 59.5	9.069	7	21 47 25.74	2.9307	7 52 9.5	12.529
8	19 58 33.96	2.4105	16 33 52.2	9.173	8	21 49 39.49	2.9277	7 39 36.6	12.568
9	20 0 58.47	2.4064	16 24 38.8	9.274	9	21 51 53.06	2.9247	7 27 1.4	12.606
10	20 3 22.73	2.4023	16 15 19.3	9.376	10	21 54 6.46	2.9218	7 14 23.9	12.643
11	20 5 46.74	2.3983	16 5 53.7	9.476	11	21 56 19.68	2.9189	7 1 44.3	12.678
12	20 8 10.51	2.3941	15 56 22.2	9.574	12	21 58 32.73	2.9162	6 49 2.6	12.719
13	20 10 34.03	2.3899	15 46 44.9	9.671	13	22 0 45.62	2.9134	6 36 18.9	12.744
14	20 12 57.30	2.3857	15 37 1.7	9.767	14	22 2 58.34	2.9107	6 23 33.3	12.775
15	20 15 20.32	2.3816	15 27 12.8	9.862	15	22 5 10.90	2.9081	6 10 45.9	12.804
16	20 17 43.09	2.3774	15 17 18.3	9.954	16	22 7 23.31	2.9055	5 57 56.8	12.833
17	20 20 5.61	2.3732	15 7 18.3	10.046	17	22 9 35.56	2.9029	5 45 5.9	12.862
18	20 22 27.88	2.3691	14 57 12.8	10.137	18	22 11 47.66	2.9004	5 32 13.4	12.888
19	20 24 49.90	2.3649	14 47 1.9	10.226	19	22 13 59.61	2.1980	5 19 19.4	12.919
20	20 27 11.67	2.3608	14 36 45.7	10.313	20	22 16 11.42	2.1957	5 6 24.0	12.935
21	20 29 33.19	2.3567	14 26 24.3	10.400	21	22 18 23.09	2.1934	4 53 27.2	12.957
22	20 31 54.47	2.3526	14 15 57.7	10.485	22	22 20 34.63	2.1911	4 40 29.1	12.979
23	20 34 15.50	2.3484	S. 14° 5' 26.1"	10.568	23	22 22 46.03	2.1889	S. 4° 27' 29.7"	12.999
SATURDAY 26.					MONDAY 28.				
0	20 36 36.28	2.3443	S. 13° 54' 49.5"	10.651	0	22 24 57.30	2.1868	S. 4° 14' 29.2"	13.017
1	20 38 56.82	2.3403	13 44 8.0	10.732	1	22 27 8.45	2.1847	4 1 27.7	13.034
2	20 41 17.11	2.3361	13 33 21.7	10.812	2	22 29 19.47	2.1827	3 48 25.1	13.051
3	20 43 37.15	2.3320	13 22 30.6	10.890	3	22 31 30.37	2.1807	3 35 21.6	13.065
4	20 45 56.95	2.3280	13 11 34.9	10.967	4	22 33 41.15	2.1789	3 22 17.3	13.078
5	20 48 16.51	2.3239	13 0 34.6	11.043	5	22 35 51.83	2.1771	3 9 12.2	13.091
6	20 50 35.82	2.3199	12 49 29.8	11.117	6	22 38 2.40	2.1753	2 56 6.4	13.102
7	20 52 54.90	2.3160	12 38 20.6	11.189	7	22 40 12.86	2.1735	2 43 0.0	13.111
8	20 55 13.74	2.3120	12 27 7.1	11.261	8	22 42 23.22	2.1719	2 29 53.1	13.120
9	20 57 32.34	2.3081	12 15 49.3	11.331	9	22 44 33.49	2.1703	2 16 45.6	13.128
10	20 59 50.71	2.3042	12 4 27.3	11.400	10	22 46 43.66	2.1687	2 3 37.7	13.134
11	21 2 8.84	2.3003	11 53 1.3	11.467	11	22 48 53.74	2.1672	1 50 29.5	13.138
12	21 4 26.74	2.2964	11 41 31.3	11.533	12	22 51 3.73	2.1658	1 37 21.1	13.142
13	21 6 44.41	2.2926	11 29 57.4	11.598	13	22 53 13.64	2.1645	1 24 12.5	13.145
14	21 9 1.85	2.2888	11 18 19.6	11.661	14	22 55 23.47	2.1632	1 11 3.7	13.147
15	21 11 19.07	2.2851	11 6 38.1	11.722	15	22 57 33.22	2.1619	0 57 54.9	13.146
16	21 13 36.07	2.2814	10 54 52.9	11.783	16	22 59 42.90	2.1608	0 44 46.2	13.145
17	21 15 52.84	2.2777	10 43 4.1	11.842	17	23 1 52.52	2.1597	0 31 37.5	13.143
18	21 18 9.39	2.2740	10 31 11.8	11.900	18	23 4 2.07	2.1587	0 18 29.0	13.139
19	21 20 25.72	2.2704	10 19 16.1	11.957	19	23 6 11.56	2.1577	S. 0° 5' 20.8"	13.134
20	21 22 41.84	2.2669	10 7 17.0	12.012	20	23 8 20.99	2.1568	N. 0° 7' 47.1"	13.129
21	21 24 57.75	2.2634	9 55 14.7	12.065	21	23 10 30.37	2.1559	0 20 54.7	13.122
22	21 27 13.45	2.2599	9 43 9.2	12.117	22	23 12 39.70	2.1551	0 34 1.8	13.114
23	21 29 28.94	2.2565	9 31 0.6	12.169	23	23 14 48.98	2.1543	0 47 8.4	13.105
24	21 31 44.23	2.2531	S. 9° 18' 48.9"	12.219	24	23 16 58.21	2.1535	N. 1° 0' 14.4"	13.094

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 29.					WEDNESDAY 30.				
0	^h 23 ^m 16 ^s 58.21	2.1535	N. 1° 0' 14.4"	13.094	0	^h 0 ^m 8 ^s 35.83	2.1540	N. 6° 8' 38.8"	12.498
1	23 19 7.40	2.1539	1 13 19.7	13.089	1	0 10 45.09	2.1546	6 21 7.5	12.459
2	23 21 16.56	2.1534	1 26 24.3	13.089	2	0 12 54.39	2.1553	6 33 33.9	12.419
3	23 23 25.69	2.1519	1 39 28.0	13.055	3	0 15 3.73	2.1561	6 45 57.8	12.378
4	23 25 34.79	2.1514	1 52 30.9	13.041	4	0 17 13.12	2.1570	6 58 19.2	12.336
5	23 27 43.86	2.1510	2 5 32.9	13.094	5	0 19 22.57	2.1579	7 10 38.1	12.293
6	23 29 52.91	2.1507	2 18 33.7	13.006	6	0 21 32.07	2.1588	7 22 54.3	12.248
7	23 32 1.94	2.1504	2 31 33.6	12.987	7	0 23 41.63	2.1598	7 35 7.8	12.203
8	23 34 10.96	2.1501	2 44 32.3	12.968	8	0 25 51.25	2.1607	7 47 18.6	12.157
9	23 36 19.96	2.1499	2 57 29.8	12.947	9	0 28 0.92	2.1617	7 59 26.6	12.109
10	23 38 28.95	2.1498	3 10 25.9	12.924	10	0 30 10.65	2.1629	8 11 31.7	12.060
11	23 40 37.94	2.1498	3 23 20.7	12.909	11	0 32 20.46	2.1641	8 23 33.8	12.010
12	23 42 46.93	2.1498	3 36 14.1	12.878	12	0 34 30.34	2.1659	8 35 32.9	11.959
13	23 44 55.92	2.1498	3 49 6.0	12.859	13	0 36 40.29	2.1664	8 47 28.9	11.907
14	23 47 4.91	2.1499	4 1 56.3	12.825	14	0 38 50.31	2.1677	8 59 21.8	11.855
15	23 49 13.91	2.1501	4 14 45.0	12.797	15	0 41 0.41	2.1690	9 11 11.5	11.802
16	23 51 22.92	2.1504	4 27 32.0	12.768	16	0 43 10.59	2.1703	9 22 58.0	11.747
17	23 53 31.95	2.1507	4 40 17.2	12.738	17	0 45 20.85	2.1717	9 34 41.1	11.690
18	23 55 41.00	2.1510	4 53 0.6	12.707	18	0 47 31.20	2.1739	9 46 20.8	11.639
19	23 57 50.07	2.1513	5 5 42.1	12.675	19	0 49 41.63	2.1746	9 57 57.0	11.575
20	23 59 59.16	2.1517	5 18 21.6	12.649	20	0 51 52.15	2.1761	10 9 29.8	11.517
21	0 2 8.28	2.1522	5 30 59.1	12.607	21	0 54 2.76	2.1776	10 20 59.0	11.456
22	0 4 17.43	2.1527	5 43 34.5	12.572	22	0 56 13.46	2.1791	10 32 24.5	11.394
23	0 6 26.61	2.1533	5 56 7.8	12.536	23	0 58 24.25	2.1807	10 43 46.3	11.339
24	0 8 35.83	2.1540	N. 6° 8' 38.8"	12.498	24	1 0 35.14	2.1823	N. 10° 55' 4.4"	11.289

PHASES OF THE MOON.

○ Full Moon,	d	h	m
☾ Last Quarter,	13	11	1.1
● New Moon,	21	4	21.1
☾ First Quarter,	28	0	1.6

☾ Apogee,	d	h
☾ Perigee,	13	1.3
	25	3.1

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W. 120° 17' 54"	2801	121° 56' 47"	2809	123° 35' 39"	2804	125° 14' 29"	2805
	Antares	W. 91 57 39	2822	93 43 50	2823	95 30 0	2824	97 16 9	2825
	α Aquilæ	W. 44 26 34	2853	45 51 41	2857	47 17 54	2861	48 45 7	2865
	α Arietis	E. 55 59 51	2898	54 14 32	2931	52 29 18	2935	50 44 10	2939
	Saturn	E. 59 43 29	2920	57 57 0	2921	56 10 33	2924	54 24 10	2926
	Jupiter	E. 73 15 53	2945	71 28 32	2946	69 41 13	2947	67 53 55	2948
2	Aldebaran	E. 88 59 9	2900	87 13 10	2900	85 27 11	2901	83 41 13	2902
	α Aquilæ	W. 56 13 9	2941	57 44 36	2919	59 16 31	2929	60 48 51	2928
	α Arietis	E. 42 0 14	2939	40 15 55	2978	38 31 49	2988	36 47 57	2999
	Saturn	E. 45 33 20	2906	43 47 29	2911	42 1 45	2917	40 16 10	2922
	Jupiter	E. 58 58 4	2960	57 11 5	2962	55 24 10	2965	53 37 19	2976
	Aldebaran	E. 74 52 3	2914	73 6 24	2917	71 20 50	2921	69 35 21	2925
3	α Aquilæ	W. 68 35 6	2897	70 8 59	2881	71 43 0	2817	73 17 6	2814
	Fomalhaut	W. 43 33 10	3444	44 54 37	3381	46 17 15	3327	47 40 55	3279
	Jupiter	E. 44 44 37	2993	42 58 27	2996	41 12 25	2905	39 26 33	2911
	Aldebaran	E. 60 49 31	2950	59 4 44	2956	57 20 6	2963	55 35 38	2970
4	Fomalhaut	W. 54 51 22	3112	56 19 17	3091	57 47 38	3073	59 16 21	3056
	α Pegasi	W. 33 21 51	2842	34 55 25	2811	36 29 39	2785	38 4 26	2765
	Jupiter	E. 30 39 50	2953	28 55 7	2963	27 10 39	2973	25 26 26	2986
	Aldebaran	E. 46 56 4	2413	45 12 48	2423	43 29 46	2434	41 47 0	2445
	Mars	E. 82 16 26	2437	80 33 44	2445	78 51 13	2453	77 8 54	2461
	Pollux	E. 89 3 48	2442	87 21 13	2450	85 38 50	2459	83 56 39	2467
5	Fomalhaut	W. 66 43 49	3013	68 13 46	3009	69 43 47	3008	71 13 50	3007
	α Pegasi	W. 46 3 43	2709	47 40 11	2705	49 16 44	2703	50 53 20	2703
	Aldebaran	E. 33 17 35	2516	31 36 44	2533	29 56 17	2553	28 16 17	2574
	Mars	E. 68 40 21	2508	66 59 19	2518	65 18 31	2529	63 37 58	2540
	Pollux	E. 75 29 3	2519	73 48 16	2530	72 7 45	2542	70 27 30	2555
6	Fomalhaut	W. 78 43 34	3027	80 13 13	3034	81 42 43	3043	83 12 3	3052
	α Pegasi	W. 58 55 52	2719	60 32 7	2725	62 8 14	2732	63 44 12	2740
	Mars	E. 55 19 9	2599	53 40 13	2612	52 1 34	2625	50 23 13	2639
	Pollux	E. 62 10 45	2624	60 32 23	2639	58 54 21	2655	57 16 40	2671
7	α Arietis	W. 28 3 14	2782	29 38 6	2781	31 12 59	2782	32 47 50	2785
	Saturn	W. 24 21 56	2714	25 58 17	2716	27 34 36	2719	29 10 50	2725
	Mars	E. 42 16 8	2710	40 39 41	2725	39 3 34	2740	37 27 47	2755
	Pollux	E. 49 13 55	2760	47 38 35	2780	46 3 41	2801	44 29 14	2822
	Regulus	E. 85 34 37	2857	83 56 59	2869	82 19 38	2883	80 42 35	2896
8	α Arietis	W. 40 40 31	2818	42 14 35	2827	43 48 28	2836	45 22 9	2846
	Saturn	W. 37 9 49	2765	38 45 3	2775	40 20 4	2785	41 54 51	2795
	Jupiter	W. 23 41 23	2726	25 17 28	2735	26 53 21	2746	28 29 0	2756
	Mars	E. 29 34 17	2843	28 0 45	2862	26 27 38	2883	24 54 58	2906
	Pollux	E. 36 44 29	2949	35 13 12	2979	33 42 33	3012	32 12 35	3048
	Regulus	E. 72 41 53	2765	71 6 39	2779	69 31 44	2793	67 57 7	2806
9	α Arietis	W. 53 7 22	2897	54 39 45	2907	56 11 55	2917	57 43 52	2928
	Saturn	W. 49 45 19	2850	51 18 42	2861	52 51 51	2872	54 24 46	2882
	Jupiter	W. 36 23 38	2813	37 57 49	2824	39 31 46	2835	41 5 29	2846

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun W.	126° 53' 17"	2807	128° 32' 2"	2809	130° 10' 45"	2811	131° 49' 25"	2814
	Antares W.	99 2 16	2806	100 48 21	2806	102 34 23	2801	104 20 21	2804
	α Aquilæ W.	50 13 15	3061	51 42 12	3096	53 11 53	2894	54 42 13	2895
	α Arietis E.	48 59 8	2344	47 14 12	2349	45 29 24	2355	43 44 44	2362
	Saturn E.	52 37 50	2289	50 51 34	2292	49 5 23	2296	47 19 18	2301
	Jupiter E.	66 6 39	2949	64 19 25	2951	62 32 14	2954	60 45 7	2957
	Aldebaran E.	81 55 17	2304	80 9 24	2306	78 23 33	2309	76 37 46	2311
2	α Aquilæ W.	62 21 33	2868	63 54 33	2855	65 27 50	2843	67 1 22	2834
	α Arietis E.	35 4 21	2419	33 21 3	2426	31 38 6	2443	29 55 32	2461
	Saturn E.	38 30 44	2331	36 45 29	2339	35 0 26	2348	33 15 37	2359
	Jupiter E.	51 50 33	2979	50 3 53	2977	48 17 20	2983	46 30 55	2987
	Aldebaran E.	67 49 58	2329	66 4 41	2333	64 19 30	2339	62 34 27	2344
3	α Aquilæ W.	74 51 16	2812	76 25 28	2811	77 59 41	2812	79 33 53	2815
	Fomalhaut W.	49 5 31	3236	50 30 57	3198	51 57 8	3166	53 23 58	3138
	Jupiter E.	37 40 50	2318	35 55 17	2326	34 9 56	2335	32 24 47	2343
	Aldebaran E.	53 51 20	2378	52 7 13	2385	50 23 17	2394	48 39 34	2403
4	Fomalhaut W.	60 45 24	3043	62 14 43	3033	63 44 15	3024	65 13 58	3018
	α Pegasi W.	39 39 40	2747	41 15 17	2733	42 51 13	2722	44 27 23	2715
	Jupiter E.	23 42 31	2398	21 58 54	2412	20 15 37	2429	18 32 43	2448
	Aldebaran E.	40 4 30	2458	38 22 17	2470	36 40 22	2485	34 58 48	2500
	Mars E.	75 26 46	2470	73 44 50	2479	72 3 7	2488	70 21 37	2498
	Pollux E.	82 14 40	2477	80 32 54	2487	78 51 22	2497	77 10 5	2508
5	Fomalhaut W.	72 43 54	3009	74 13 56	3012	75 43 54	3016	77 13 47	3021
	α Pegasi W.	52 29 56	2704	54 6 31	2706	55 43 3	2710	57 19 30	2713
	Aldebaran E.	26 36 46	2597	24 57 47	2623	23 19 23	2652	21 41 39	2687
	Mars E.	61 57 40	2551	60 17 38	2563	58 37 52	2574	56 58 22	2587
	Pollux E.	68 47 33	2568	67 7 54	2581	65 28 33	2594	63 49 30	2608
6	Fomalhaut W.	84 41 12	3061	86 10 9	3073	87 38 52	3085	89 7 20	3097
	α Pegasi W.	65 19 59	2747	66 55 36	2756	68 31 1	2766	70 6 14	2775
	Mars E.	48 45 11	2652	47 7 27	2666	45 30 1	2681	43 52 55	2695
	Pollux E.	55 39 21	2687	54 2 24	2704	52 25 50	2722	50 49 40	2741
7	α Arietis W.	34 22 37	2789	35 57 19	2795	37 31 53	2803	39 6 17	2811
	Saturn W.	30 46 57	2731	32 22 56	2738	33 58 45	2747	35 34 23	2756
	Mars E.	35 52 20	2772	34 17 15	2789	32 42 33	2806	31 8 13	2825
	Pollux E.	42 55 16	2845	41 21 47	2869	39 48 48	2894	38 16 22	2920
	Regulus E.	79 5 50	2710	77 29 23	2724	75 53 15	2738	74 17 25	2751
8	α Arietis W.	46 55 37	2855	48 28 53	2866	50 1 56	2876	51 34 46	2887
	Saturn W.	43 29 25	2806	45 3 45	2817	46 37 51	2828	48 11 42	2839
	Jupiter W.	30 4 25	2769	31 39 35	2779	33 14 31	2790	34 49 12	2801
	Mars E.	23 22 47	2831	21 51 7	2858	20 20 1	2888	18 49 33	2922
	Pollux E.	30 43 22	3087	29 14 57	3130	27 47 24	3178	26 20 48	3232
	Regulus E.	66 22 47	2820	64 48 45	2834	63 15 1	2847	61 41 34	2861
9	α Arietis W.	59 15 35	2938	60 47 6	2948	62 18 24	2958	63 49 30	2968
	Saturn W.	55 57 28	2883	57 29 56	2904	59 2 10	2914	60 34 11	2924
	Jupiter W.	42 38 57	2857	44 12 11	2867	45 45 12	2878	47 17 59	2888

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	Aldebaran W.	20 14 37	2910	21 44 37	2901	23 14 48	2996	24 45 6	2993
	Regulus E.	60 8 25	2974	58 35 33	2987	57 2 58	2901	55 30 40	2913
10	α Arietis W.	65 20 23	2977	66 51 4	2986	68 21 34	2996	69 51 52	3005
	Saturn W.	62 6 0	2934	63 37 36	2943	65 9 0	2953	66 40 12	2962
	Jupiter W.	48 50 33	2908	50 22 54	2909	51 55 2	2918	53 26 58	2927
	Aldebaran W.	32 16 29	3007	33 46 33	3019	35 16 31	3018	36 46 22	3022
	Regulus E.	47 53 13	2977	46 22 31	2989	44 52 4	3001	43 21 53	3014
	Spica E.	101 40 38	2940	100 9 10	2250	98 37 55	2960	97 6 52	2969
	Sun E.	127 49 20	3314	126 25 25	3325	125 1 43	3337	123 38 14	3347
11	Jupiter W.	61 3 53	2997	62 34 47	2975	64 5 31	2999	65 36 6	2999
	Aldebaran W.	44 13 54	3052	45 43 3	3056	47 12 6	3069	48 41 2	3067
	Regulus E.	35 54 45	3074	34 26 4	3087	32 57 38	3100	31 29 28	3119
	Spica E.	80 34 30	3012	88 4 32	3090	86 34 44	3097	85 5 5	3094
	Venus E.	92 36 19	3506	91 16 1	3514	89 55 52	3521	88 35 51	3527
	Sun E.	116 43 36	3392	115 21 10	3400	113 58 54	3408	112 36 47	3415
12	Jupiter W.	73 7 15	3014	74 37 11	3018	76 7 2	3021	77 36 49	3023
	Aldebaran W.	56 4 21	3087	57 32 47	3089	59 1 10	3092	60 29 29	3094
	Mars W.	19 56 46	3199	21 22 56	3188	22 49 20	3178	24 15 55	3171
	Spica E.	77 38 38	3060	76 9 39	3064	74 40 45	3067	73 11 55	3069
	Venus E.	81 57 33	3557	80 38 12	3561	79 18 55	3565	77 59 42	3568
	Sun E.	105 48 0	3443	104 26 32	3447	103 5 9	3451	101 43 50	3454
13	Aldebaran W.	67 50 38	3098	69 18 50	3098	70 47 2	3096	72 15 16	3095
	Mars W.	31 30 43	3144	32 57 59	3140	34 25 20	3136	35 52 46	3131
	Pollux W.	27 13 40	3410	28 35 45	3380	29 58 24	3354	31 21 33	3336
	Spica E.	65 48 26	3078	64 19 49	3077	62 51 11	3077	61 22 33	3076
	Venus E.	71 24 21	3576	70 5 21	3577	68 46 22	3576	67 27 22	3575
	Sun E.	94 57 57	3492	93 36 50	3493	92 15 43	3461	90 54 35	3460
14	Mars W.	43 11 26	3105	44 39 29	3099	46 7 40	3091	47 36 0	3084
	Pollux W.	38 23 26	3239	39 48 49	3294	41 14 30	3209	42 40 28	3196
	Spica E.	53 58 53	3164	52 29 59	3060	51 1 0	3055	49 31 55	3150
	Venus E.	60 51 51	3563	59 32 36	3558	58 13 16	3554	56 53 51	3548
	Sun E.	84 8 24	3446	82 46 59	3441	81 25 29	3437	80 3 54	3431
15	Mars W.	54 59 54	3045	56 29 11	3036	57 58 39	3028	59 28 19	3018
	Pollux W.	49 54 14	3139	51 21 45	3119	52 49 32	3106	54 17 34	3094
	Spica E.	42 4 51	3019	40 35 2	3019	39 5 4	3004	37 34 56	2995
	Venus E.	50 15 10	3515	48 55 3	3508	47 34 48	3499	46 14 23	3491
	Sun E.	73 14 12	3395	71 51 50	3387	70 29 19	3379	69 6 38	3369
16	Mars W.	66 59 48	2969	68 30 48	2950	70 2 3	2939	71 33 33	2928
	Pollux W.	61 41 37	3029	63 11 14	3016	64 41 7	3003	66 11 16	2989
	Regulus W.	24 40 57	3057	26 9 59	3034	27 39 29	3013	29 9 26	2993
	Spica E.	30 1 33	2950	28 30 17	2939	26 58 48	2929	25 27 6	2919
	Venus E.	39 29 49	3444	38 8 22	3433	36 46 43	3423	35 24 53	3413
	Sun E.	62 10 19	3315	60 46 25	3304	59 22 18	3291	57 57 56	3278
17	Pollux W.	73 46 25	2919	75 18 20	2905	76 50 33	2890	78 23 5	2876
	Regulus W.	36 45 14	2901	38 17 31	2884	39 50 10	2867	41 23 11	2850

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
9	Aldebaran W. Regulus E.	26° 15' 27" 53 58 38	2994 2927	27° 45' 47" 52 26 53	2996 2939	29° 16' 5" 50 55 24	2999 2962	30° 46' 19" 49 24 11	3002 2964
10	α Arietis W. Saturn W. Jupiter W. Aldebaran W. Regulus E. Spica E. Sun E.	71 21 59 68 11 13 54 58 43 38 16 7 41 51 58 95 36 1 122 14 57	3014 2970 2936 3028 3026 2979 3357	72 51 55 69 42 3 56 30 16 39 45 45 40 22 18 94 5 22 120 51 51	3022 2979 2945 3034 3038 2988 3366	74 21 41 71 12 42 58 1 38 41 15 15 38 52 52 92 34 54 119 28 56	3030 2987 2953 3040 3050 2997 3375	75 51 17 72 43 11 59 32 50 42 44 38 37 23 41 91 4 37 118 6 11	3038 2995 2960 3046 3062 3005 3384
11	Jupiter W. Aldebaran W. Regulus E. Spica E. Venus E. Sun E.	67 6 33 50 9 52 30 1 33 83 35 34 87 15 57 111 14 48	2994 3071 3196 3039 3534 3429	68 36 53 51 38 37 28 33 55 82 6 10 85 56 10 109 52 56	2999 3076 3141 3045 3541 3498	70 7 7 53 7 16 27 6 35 80 36 53 84 36 31 108 31 11	3005 3079 3157 3050 3547 3434	71 37 14 54 35 51 25 39 34 79 7 42 83 16 59 107 9 33	3009 3063 3175 3056 3553 3438
12	Jupiter W. Aldebaran W. Mars W. Spica E. Venus E. Sun E.	79 6 33 61 57 46 25 42 39 71 43 8 76 40 33 100 22 35	3026 3096 3164 3072 3571 3457	80 36 14 63 26 1 27 9 31 70 14 24 75 21 27 99 1 23	3027 3097 3159 3074 3574 3459	82 5 53 64 54 14 28 36 29 68 45 43 74 2 24 97 40 13	3029 3098 3154 3076 3575 3461	83 35 30 66 22 26 30 3 33 67 17 4 72 43 22 96 19 5	3030 3098 3149 3077 3576 3461
13	Aldebaran W. Mars W. Pollux W. Spica E. Venus E. Sun E.	73 43 32 37 20 18 32 45 10 59 53 54 66 8 20 89 33 26	3083 3196 3308 3075 3573 3458	75 11 50 38 47 56 34 9 12 58 25 14 64 49 16 88 12 15	3091 3191 3289 3073 3571 3455	76 40 11 40 15 40 35 33 36 56 56 31 63 30 10 86 51 1	3088 3116 3271 3069 3569 3453	78 8 35 41 43 30 36 58 21 55 27 44 62 11 2 85 29 44	3085 3111 3254 3066 3566 3450
14	Mars W. Pollux W. Spica E. Venus E. Sun E.	49 4 29 44 6 42 48 2 44 55 34 20 78 42 13	3078 3183 3045 3543 3425	50 33 6 45 33 12 46 33 27 54 14 43 77 20 25	3070 3170 3039 3536 3418	52 1 52 46 59 57 45 4 3 52 54 59 75 58 29	3082 3157 3033 3530 3411	53 30 48 48 26 58 43 34 31 51 35 8 74 36 25	3054 3144 3096 3594 3403
15	Mars W. Pollux W. Spica E. Venus E. Sun E.	60 58 10 55 45 51 36 4 37 44 53 49 67 43 46	3007 3081 2986 3482 3359	62 28 14 57 14 24 34 34 7 43 33 5 66 20 43	2996 3069 2978 3472 3349	63 58 32 58 43 12 33 3 27 42 12 10 64 57 28	2985 3066 2969 3463 3338	65 29 3 60 12 16 31 32 36 40 51 5 63 34 0	2974 3042 2960 3454 3326
16	Mars W. Pollux W. Regulus W. Spica E. Venus E. Sun E.	73 5 19 67 41 43 30 39 49 23 55 11 34 2 51 56 33 19	2913 2975 2973 2909 3402 2965	74 37 21 69 12 27 32 10 36 22 23 3 32 40 37 55 8 27	2900 2961 2954 2988 3392 3252	76 9 40 70 43 29 33 41 46 20 50 42 31 18 11 53 43 19	2987 2947 2936 2988 3382 3228	77 42 16 72 14 48 35 13 19 19 18 8 29 55 34 52 17 55	2973 2933 2919 2979 3372 2925
17	Pollux W. Regulus W.	79 55 55 42 56 34	2961 2934	81 29 4 44 30 18	2946 2918	83 2 32 46 4 23	2931 2901	84 36 19 47 38 50	2917 2785

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LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
17	SUN	E.	50° 52' 15"	3210	49° 26' 18"	3196	48° 0' 4"	3181	46° 33' 32"	3167
18	Pollux	W.	86 10 25	2803	87 44 50	2788	89 19 34	2773	90 54 38	2758
	Regulus	W.	49 13 38	2769	50 48 47	2753	52 24 18	2736	54 0 10	2720
	SUN	E.	39 16 23	3090	37 48 1	3073	36 19 19	3058	34 50 18	3043
19	Pollux	W.	98 54 44	2687	100 31 42	2673	102 8 59	2659	103 46 34	2645
	Regulus	W.	62 4 47	2641	63 42 46	2626	65 21 5	2611	66 59 45	2596
	SUN	E.	27 20 20	2963	25 49 21	2948	24 18 3	2932	22 46 25	2917
23	SUN	W.	23 40 1	2587	25 19 14	2583	26 58 33	2577	28 37 59	2573
	Fomalhaut	E.	69 22 11	2827	67 48 18	2837	66 14 38	2848	64 41 13	2862
	α Pegasi	E.	86 31 50	2403	84 48 20	2390	83 4 44	2396	81 21 3	2392
24	SUN	W.	36 56 33	2356	38 36 29	2354	40 16 27	2353	41 56 27	2351
	Fomalhaut	E.	56 59 31	2969	55 28 39	2999	53 58 25	3033	52 28 53	3079
	α Pegasi	E.	72 41 55	2389	70 58 5	2391	69 14 17	2393	67 30 32	2396
25	SUN	W.	50 16 42	2551	51 56 44	2552	53 36 45	2553	55 16 44	2555
	Fomalhaut	E.	45 14 59	3346	43 51 41	3423	42 29 51	3510	41 9 38	3606
	α Pegasi	E.	58 53 20	2425	57 10 21	2434	55 27 35	2444	53 45 3	2455
26	SUN	W.	63 35 58	2567	65 15 38	2571	66 55 13	2574	68 34 43	2578
	α Pegasi	E.	45 17 3	2535	43 36 39	2559	41 56 47	2584	40 17 30	2619
	α Arietis	E.	87 20 13	2283	85 33 48	2265	83 47 27	2269	82 1 12	2293
	Saturn	E.	89 19 4	2248	87 31 48	2251	85 44 37	2256	83 57 32	2260
27	SUN	W.	76 50 53	2599	78 29 49	2604	80 8 38	2609	81 47 21	2614
	α Aquilæ	W.	32 1 20	4399	33 6 42	4306	34 15 2	4039	35 26 3	3295
	α Arietis	E.	73 11 26	2316	71 25 50	2321	69 40 21	2326	67 54 59	2331
	Saturn	E.	75 3 33	2280	73 17 4	2285	71 30 42	2290	69 44 26	2296
	Jupiter	E.	87 9 33	2246	85 22 14	2251	83 35 3	2256	81 47 59	2261
28	SUN	W.	89 59 8	2641	91 37 7	2646	93 14 59	2652	94 52 43	2658
	α Aquilæ	W.	41 52 29	3409	43 14 35	3345	44 37 55	3288	46 2 21	3237
	α Arietis	E.	59 10 21	2364	57 25 54	2371	55 41 37	2378	53 57 30	2386
	Saturn	E.	60 55 18	2394	59 9 53	2331	57 24 38	2337	55 39 32	2344
	Jupiter	E.	72 54 27	2287	71 8 8	2291	69 21 56	2297	67 35 52	2303
	Aldebaran	E.	92 12 2	2339	90 26 59	2344	88 42 3	2348	86 57 14	2354
29	SUN	W.	102 59 21	2689	104 36 16	2695	106 13 2	2701	107 49 40	2707
	α Aquilæ	W.	53 17 15	3063	54 46 10	3039	56 15 35	3018	57 45 26	3000
	α Arietis	E.	45 19 55	2430	43 37 3	2441	41 54 26	2451	40 12 4	2462
	Saturn	E.	46 56 35	2380	45 12 32	2388	43 28 40	2397	41 45 1	2406
	Jupiter	E.	58 47 41	2333	57 2 29	2339	55 17 26	2345	53 32 32	2351
	Aldebaran	E.	78 15 14	2384	76 31 16	2389	74 47 26	2396	73 3 45	2402
30	SUN	W.	115 50 41	2741	117 26 27	2748	119 2 3	2755	120 37 30	2761
	α Aquilæ	W.	65 19 27	2939	66 50 56	2931	68 22 35	2926	69 54 21	2922
	Fomalhaut	W.	40 51 11	3708	42 7 50	3699	43 25 53	3590	44 45 11	3498
	Saturn	E.	33 10 14	2480	31 28 5	2473	29 46 14	2488	28 4 44	2504
	Jupiter	E.	44 50 22	2384	43 6 25	2392	41 22 39	2400	39 39 4	2407
	Aldebaran	E.	64 27 40	2430	62 44 56	2443	61 2 22	2450	59 19 59	2456

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
17	Sun	E.	45 6 43	3152	43 39 36	3136	42 12 10	3121	40 44 26	3105
18	Pollux	W.	92 30 1	2744	94 5 43	2729	95 41 44	2715	97 18 4	2700
	Regulus	W.	55 36 23	2704	57 12 57	2689	58 49 52	2675	60 27 9	2657
	Sun	E.	33 20 58	3026	31 51 18	3010	30 21 18	2996	28 50 59	2979
19	Pollux	W.	105 24 27	2632	107 2 38	2620	108 41 6	2607	110 19 51	2595
	Regulus	W.	68 38 45	2581	70 18 6	2566	71 57 47	2552	73 37 48	2538
	Sun	E.	21 14 28	2909	19 42 12	2887	18 9 37	2873	16 36 44	2860
23	Sun	W.	30 17 31	2589	31 57 9	2564	33 36 53	2561	35 16 41	2559
	Fomalhaut	E.	63 8 5	2678	61 35 18	2666	60 2 54	2617	58 30 57	2642
	α Pegasi	E.	79 37 17	2390	77 53 28	2389	76 9 37	2389	74 25 46	2389
24	Sun	W.	43 36 29	2551	45 16 32	2551	46 56 35	2550	48 36 39	2551
	Fomalhaut	E.	51 0 9	3114	49 32 17	3163	48 5 24	3218	46 39 36	3278
	α Pegasi	E.	65 46 52	2401	64 3 18	2405	62 19 50	2410	60 36 30	2417
25	Sun	W.	56 56 41	2557	58 36 35	2559	60 16 26	2561	61 56 14	2564
	Fomalhaut	E.	39 51 12	3718	38 34 44	3843	37 20 26	3985	36 8 32	4150
	α Pegasi	E.	52 2 47	2468	50 20 49	2482	48 39 11	2498	46 57 55	2515
26	Sun	W.	70 14 8	2583	71 53 27	2586	73 32 41	2590	75 11 50	2594
	α Pegasi	E.	38 38 52	2645	37 0 58	2681	35 23 53	2722	33 47 43	2771
	α Arietis	E.	80 15 2	2997	78 28 58	2302	76 43 1	2306	74 57 10	2311
	Saturn	E.	82 10 33	2963	80 23 39	2967	78 36 51	2971	76 50 9	2975
27	Sun	W.	83 25 57	2619	85 4 26	2625	86 42 47	2630	88 21 1	2635
	α Aquilæ	W.	36 39 28	3769	37 55 2	3680	39 12 32	3565	40 31 45	3482
	α Arietis	E.	66 9 45	2338	64 24 41	2344	62 39 45	2350	60 54 58	2357
	Saturn	E.	67 58 22	2301	66 12 24	2307	64 26 34	2319	62 40 52	2317
	Jupiter	E.	80 1 2	2966	78 14 12	2970	76 27 29	2976	74 40 54	2981
28	Sun	W.	96 30 19	2665	98 7 46	2671	99 45 5	2676	101 22 17	2682
	α Aquilæ	W.	47 27 46	3193	48 54 4	3154	50 21 8	3120	51 48 53	3090
	α Arietis	E.	52 13 35	2394	50 29 52	2402	48 46 20	2411	47 3 1	2420
	Saturn	E.	53 54 36	2350	52 9 50	2357	50 25 14	2365	48 40 49	2373
	Jupiter	E.	65 49 57	2309	64 4 10	2315	62 18 32	2320	60 33 2	2326
	Aldebaran	E.	85 12 33	2359	83 28 0	2366	81 43 36	2372	79 59 21	2378
29	Sun	W.	109 26 10	2714	111 2 31	2721	112 38 43	2728	114 14 46	2734
	α Aquilæ	W.	59 15 39	2984	60 46 12	2969	62 17 3	2958	63 48 9	2948
	α Arietis	E.	38 29 58	2475	36 48 10	2489	35 6 41	2504	33 25 33	2520
	Saturn	E.	40 1 35	2415	38 18 22	2425	36 35 23	2436	34 52 40	2448
	Jupiter	E.	51 47 47	2357	50 3 11	2364	48 18 45	2371	46 34 29	2378
	Aldebaran	E.	71 20 13	2408	69 36 50	2415	67 53 37	2422	66 10 34	2429
30	Sun	W.	122 12 49	2768	123 47 59	2775	125 22 59	2782	126 57 50	2790
	α Aquilæ	W.	71 26 12	2918	72 58 8	2916	74 30 6	2915	76 2 6	2914
	Fomalhaut	W.	46 5 37	3445	47 27 3	3398	48 49 22	3355	50 12 30	3318
	Saturn	E.	26 23 37	2523	24 42 56	2545	23 2 45	2570	21 23 9	2601
	Jupiter	E.	37 55 39	2415	36 12 25	2422	34 29 22	2431	32 46 31	2440
	Aldebaran	E.	57 37 46	2465	55 55 44	2472	54 13 52	2480	52 32 11	2489

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be subtracted from	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.	added to Apparent Time.			
Thur.	1	16 ^h 31 ^m 14.58 ^s	10.809	S. 21° 53' 9".7	-22.86	16' 16".03	70.34	10 ^m 38.83 ^s	0.951	
Frid.	2	16 35 34.31	10.835	22 2 6.1	21.81	16 16.18	70.42	10 15.73	0.976	
Sat.	3	16 39 54.63	10.859	22 10 37.0	20.75	16 16.33	70.50	9 52.04	1.000	
Sun.	4	16 44 15.51	10.882	22 18 42.0	19.67	16 16.47	70.58	9 27.77	1.023	
Mon.	5	16 48 36.95	10.903	22 26 21.1	18.58	16 16.60	70.66	9 2.96	1.045	
Tues.	6	16 52 58.95	10.927	22 33 34.0	17.48	16 16.73	70.73	8 37.60	1.067	
Wed.	7	16 57 21.45	10.947	22 40 20.5	16.38	16 16.85	70.80	8 11.72	1.088	
Thur.	8	17 1 44.43	10.967	22 46 40.2	15.26	16 16.98	70.86	7 45.35	1.108	
Frid.	9	17 6 7.88	10.986	22 52 33.0	14.13	16 17.09	70.92	7 18.53	1.127	
Sat.	10	17 10 31.78	11.004	22 57 58.8	13.00	16 17.19	70.97	6 51.27	1.145	
Sun.	11	17 14 56.18	11.022	23 2 57.3	11.86	16 17.29	71.02	6 23.60	1.163	
Mon.	12	17 19 20.80	11.037	23 7 28.2	10.71	16 17.39	71.07	5 55.52	1.178	
Tues.	13	17 23 45.86	11.051	23 11 31.6	9.56	16 17.48	71.11	5 27.09	1.192	
Wed.	14	17 28 11.25	11.064	23 15 7.3	8.40	16 17.56	71.15	4 58.32	1.205	
Thur.	15	17 32 36.94	11.075	23 18 15.1	7.25	16 17.64	71.18	4 29.28	1.216	
Frid.	16	17 37 2.87	11.085	23 20 54.9	6.08	16 17.73	71.22	4 0.00	1.226	
Sat.	17	17 41 29.03	11.093	23 23 6.6	4.90	16 17.80	71.24	3 30.48	1.235	
Sun.	18	17 45 55.37	11.100	23 24 50.2	3.72	16 17.87	71.26	3 0.78	1.241	
Mon.	19	17 50 21.86	11.106	23 26 5.5	2.55	16 17.93	71.28	2 30.93	1.246	
Tues.	20	17 54 48.47	11.111	23 26 52.6	1.37	16 17.99	71.29	2 0.95	1.251	
Wed.	21	17 59 15.15	11.113	23 27 11.5	- 0.20	16 18.05	71.30	1 30.91	1.253	
Thur.	22	18 3 41.88	11.113	23 27 1.9	+ 0.98	16 18.10	71.30	1 0.83	1.253	
Frid.	23	18 8 8.59	11.112	23 26 24.1	2.16	16 18.15	71.30	0 30.75	1.253	
Sat.	24	18 12 35.23	11.110	23 25 18.0	3.34	16 18.19	71.29	0 0.71	1.250	
Sun.	25	18 17 1.82	11.105	23 23 43.6	4.52	16 18.23	71.28	0 29.22	1.245	
Mon.	26	18 21 28.29	11.099	23 21 41.0	5.69	16 18.27	71.26	0 59.03	1.239	
Tues.	27	18 25 54.59	11.093	23 19 10.2	6.87	16 18.30	71.24	1 28.69	1.233	
Wed.	28	18 30 20.70	11.084	23 16 11.4	8.03	16 18.34	71.22	1 58.17	1.224	
Thur.	29	18 34 46.58	11.074	23 12 44.7	9.20	16 18.36	71.19	2 27.41	1.214	
Frid.	30	18 39 12.21	11.063	23 8 50.1	10.36	16 18.37	71.15	2 56.40	1.203	
Sat.	31	18 43 37.55	11.050	23 4 27.7	11.51	16 18.38	71.11	3 25.10	1.190	
Sun.	32	18 48 2.57	11.036	S. 22 59 37.6	+12.65	16 18.39	71.07	3 53.49	1.176	

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0.19 from the Sidereal Time.

— prefixed to the hourly change of declination indicates that the south declinations are increasing;
+ that they are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be added to		Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	subtracted from Mean Time.	Diff. for 1 hour.	
Thur.	1	^h 16 ^m 31 ^s 16.50	10.807	S. 21° 53' 13.8"	-22.85	^m 10 ^s 38.66	0.951	^h 16 ^m 41 ^s 55.16
Frid.	2	16 35 36.16	10.833	22 2 9.9	21.80	10 15.56	0.976	16 45 51.72
Sat.	3	16 39 56.41	10.856	22 10 40.5	20.74	9 51.87	1.000	16 49 48.28
Sun.	4	16 44 17.22	10.879	22 18 45.2	19.66	9 27.61	1.023	16 53 44.83
Mon.	5	16 48 38.59	10.901	22 26 24.0	18.57	9 2.80	1.045	16 57 41.39
Tues.	6	16 53 0.51	10.924	22 33 36.6	17.47	8 37.44	1.067	17 1 37.95
Wed.	7	16 57 22.94	10.944	22 40 22.8	16.37	8 11.57	1.088	17 5 34.51
Thur.	8	17 1 45.85	10.964	22 46 42.2	15.25	7 45.21	1.108	17 9 31.06
Frid.	9	17 6 9.22	10.983	22 52 34.7	14.12	7 18.40	1.127	17 13 27.62
Sat.	10	17 10 33.04	11.001	22 58 0.2	12.99	6 51.13	1.145	17 17 24.17
Sun.	11	17 14 57.26	11.019	23 2 58.5	11.85	6 23.47	1.163	17 21 20.73
Mon.	12	17 19 21.89	11.034	23 7 29.2	10.70	5 55.40	1.178	17 25 17.29
Tues.	13	17 23 46.87	11.048	23 11 32.6	9.55	5 26.98	1.192	17 29 13.85
Wed.	14	17 28 12.17	11.061	23 15 8.0	8.39	4 58.23	1.205	17 33 10.40
Thur.	15	17 32 37.77	11.072	23 18 15.6	7.24	4 29.19	1.216	17 37 6.96
Frid.	16	17 37 3.61	11.082	23 20 55.3	6.07	3 59.91	1.226	17 41 3.52
Sat.	17	17 41 29.68	11.091	23 23 6.9	4.90	3 30.40	1.235	17 45 0.08
Sun.	18	17 45 55.93	11.097	23 24 50.4	3.72	3 0.71	1.241	17 48 56.64
Mon.	19	17 50 22.33	11.102	23 26 5.7	2.55	2 30.87	1.246	17 52 53.20
Tues.	20	17 54 48.85	11.107	23 26 52.7	1.37	2 0.90	1.251	17 56 49.75
Wed.	21	17 59 15.44	11.109	23 27 11.5	- 0.20	1 30.87	1.253	18 0 46.31
Thur.	22	18 3 42.07	11.109	23 27 1.9	+ 0.98	1 0.80	1.253	18 4 42.87
Frid.	23	18 8 8.69	11.108	23 26 24.1	2.16	0 30.74	1.253	18 8 39.43
Sat.	24	18 12 35.26	11.106	23 25 18.0	3.34	0 0.72	1.250	18 12 35.98
Sun.	25	18 17 1.74	11.101	23 23 43.7	4.52	0 29.20	1.245	18 16 32.54
Mon.	26	18 21 28.11	11.095	23 21 41.1	5.69	0 59.01	1.239	18 20 29.10
Tues.	27	18 25 54.32	11.089	23 19 10.4	6.87	1 28.66	1.233	18 24 25.66
Wed.	28	18 30 20.34	11.080	23 16 11.7	8.03	1 58.13	1.224	18 28 22.21
Thur.	29	18 34 46.13	11.070	23 12 45.1	9.20	2 27.36	1.214	18 32 18.77
Frid.	30	18 39 11.67	11.059	23 8 50.6	10.36	2 56.34	1.203	18 36 15.33
Sat.	31	18 43 36.92	11.046	23 4 28.3	11.51	3 25.03	1.190	18 40 11.89
Sun.	32	18 48 1.85	11.032	S. 22° 59' 38.4"	+12.65	3 53.41	1.176	18 44 8.44

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

— prefixed to the hourly change of declination indicates that the south declinations are increasing;
+ that they are decreasing.Diff. for 1 hour,
+ 9°.8565.
(Table III.)

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal ϕ^a .	
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ'						
1	335	249° 29' 55.0	28' 53.4	152.14	+0.74	9.9937085	-28.4	^h 7 ^m 16	53.07
2	336	250 30 46.7	29 45.0	152.17	0.66	.9936413	27.5	7 12	57.16
3	337	251 31 39.3	30 37.5	152.21	0.54	.9935764	26.5	7 9	1.25
4	338	252 32 32.7	31 30.8	152.25	0.42	.9935141	25.4	7 5	5.34
5	339	253 33 27.1	32 24.9	152.28	0.30	.9934543	24.4	7 1	9.42
6	340	254 34 22.4	33 20.0	152.32	0.17	.9933970	23.3	6 57	13.50
7	341	255 35 18.6	34 16.1	152.36	+0.04	.9933424	22.2	6 53	27.59
8	342	256 36 15.9	35 13.3	152.41	-0.08	.9932903	21.1	6 49	21.68
9	343	257 37 14.2	36 11.4	152.45	0.17	.9932408	20.0	6 45	25.78
10	344	258 38 13.5	37 10.5	152.49	0.23	.9931939	19.0	6 41	29.87
11	345	259 39 13.8	38 10.7	152.53	0.27	.9931494	18.0	6 37	33.96
12	346	260 40 15.2	39 11.9	152.58	0.28	.9931074	17.1	6 33	38.05
13	347	261 41 17.6	40 14.1	152.62	0.24	.9930677	16.2	6 29	42.13
14	348	262 42 21.0	41 17.3	152.66	0.19	.9930300	15.3	6 25	46.22
15	349	263 43 25.4	42 21.5	152.70	-0.10	.9929943	14.5	6 21	50.31
16	350	264 44 30.7	43 26.7	152.74	+0.01	.9929604	13.7	6 17	54.40
17	351	265 45 36.8	44 32.8	152.77	0.12	.9929283	13.0	6 13	58.48
18	352	266 46 43.7	45 39.5	152.80	0.25	.9928980	12.3	6 10	2.57
19	353	267 47 51.2	46 46.8	152.83	0.38	.9928694	11.5	6 6	6.65
20	354	268 48 59.3	47 54.6	152.85	0.52	.9928425	10.8	6 2	10.74
21	355	269 50 7.8	49 2.8	152.86	0.66	.9928172	10.1	5 58	14.83
22	356	270 51 16.6	50 11.5	152.87	0.77	.9927935	9.5	5 54	18.91
23	357	271 52 25.7	51 20.4	152.89	0.86	.9927715	8.8	5 50	23.00
24	358	272 53 35.2	52 29.7	152.90	0.91	.9927512	8.2	5 46	27.09
25	359	273 54 44.8	53 39.1	152.90	0.95	.9927326	7.4	5 42	31.19
26	360	274 55 54.4	54 48.5	152.90	0.95	.9927159	6.6	5 38	35.27
27	361	275 57 3.9	55 57.9	152.90	0.91	.9927011	5.7	5 34	39.35
28	362	276 58 13.2	57 7.1	152.89	0.85	.9926885	4.8	5 30	43.44
29	363	277 59 22.4	58 16.1	152.88	0.76	.9926783	3.8	5 26	47.54
30	364	278 60 31.4	59 24.9	152.87	0.66	.9926706	2.7	5 22	51.62
31	365	280 1 40.3	0 33.6	152.87	0.54	.9926654	1.6	5 18	55.71
32	366	281 2 49.0	1 42.2	152.86	+0.41	9.9926628	- 0.5	5 14	59.80
NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0 ^h .0.								Diff. for 1 hour, — 9 ^s .8296. (Table II.)	

GREENWICH MEAN TIME.									
Day of the Month.	THE MOON'S								
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
1	15 50.7	15 47.3	58 2.7	-1.04	57 50.0	-1.08	^h 8 ^m 36.1	^m 2.11	^d 9.9
2	15 43.7	15 39.9	57 36.8	1.13	57 23.0	1.17	9 27.2	2.16	10.9
3	15 36.1	15 32.1	57 8.8	1.20	56 54.1	1.24	10 19.6	2.20	11.9
4	15 28.0	15 23.8	56 39.1	1.26	56 23.8	1.27	11 12.8	2.21	12.9
5	15 19.7	15 15.5	56 8.5	1.27	55 53.3	1.26	12 5.9	2.19	13.9
6	15 11.4	15 7.4	55 38.3	1.23	55 23.6	1.19	12 57.9	2.13	14.9
7	15 3.6	15 0.1	55 9.6	1.13	54 56.5	1.04	13 48.0	2.04	15.9
8	14 56.8	14 53.9	54 44.6	0.93	54 34.0	0.82	14 35.7	1.93	16.9
9	14 51.4	14 49.5	54 24.9	0.68	54 17.7	0.52	15 21.0	1.84	17.9
10	14 48.0	14 47.2	54 12.4	-0.35	54 9.3	-0.16	16 4.2	1.77	18.9
11	14 47.0	14 47.4	54 8.4	+0.03	54 10.0	+0.24	16 46.1	1.73	19.9
12	14 48.5	14 50.4	54 14.2	0.46	54 21.0	0.67	17 27.4	1.72	20.9
13	14 52.9	14 56.2	54 30.3	0.88	54 42.2	1.10	18 9.2	1.76	21.9
14	15 0.1	15 4.7	54 56.7	1.32	55 13.7	1.51	18 52.3	1.84	22.9
15	15 10.0	15 15.8	55 32.9	1.69	55 54.2	1.85	19 37.6	1.96	23.9
16	15 22.1	15 28.8	56 17.3	1.99	56 41.9	2.10	20 26.2	2.11	24.9
17	15 35.7	15 42.9	57 7.6	2.17	57 33.9	2.20	21 18.8	2.28	25.9
18	15 50.1	15 57.1	58 0.3	2.17	58 26.1	2.10	22 15.2	2.43	26.9
19	16 3.8	16 10.1	58 50.8	1.99	59 13.8	1.82	23 14.8	2.53	27.9
20	16 15.8	16 20.6	59 34.6	1.61	59 52.5	1.36	^h 0		28.9
21	16 24.7	16 27.7	60 7.3	1.08	60 18.5	0.77	0 15.9	2.54	0.3
22	16 29.8	16 30.7	60 26.0	+0.45	60 29.5	+0.13	1 16.4	2.48	1.3
23	16 30.7	16 29.6	60 29.3	-0.18	60 25.3	-0.47	2 14.7	2.37	2.3
24	16 27.6	16 24.8	60 18.1	0.73	60 7.9	0.96	3 10.3	2.25	3.3
25	16 21.4	16 17.3	59 55.1	1.16	59 40.2	1.31	4 3.2	2.15	4.3
26	16 12.8	16 8.0	59 23.7	1.42	59 6.0	1.50	4 54.1	2.09	5.3
27	16 3.0	15 57.9	58 47.6	1.55	58 28.9	1.57	5 44.0	2.07	6.3
28	15 52.7	15 47.6	58 10.0	1.56	57 51.3	1.54	6 33.7	2.08	7.3
29	15 42.6	15 37.8	57 32.9	1.50	57 15.1	1.46	7 24.0	2.11	8.3
30	15 33.1	15 28.5	56 57.8	1.41	56 41.1	1.36	8 15.1	2.15	9.3
31	15 24.2	15 20.0	56 25.1	1.30	56 9.8	1.24	9 7.1	2.17	10.3
32	15 16.0	15 12.2	55 55.1	-1.19	55 41.1	-1.14	9 59.4	2.17	11.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 1.					SATURDAY 3.				
0	1 0 35.14	2.1893	N.10 55 44	11.989	0	2 47 31.02	2.2738	N.18 24 45.6	7.128
1	1 2 46.13	2.1840	11 6 18.6	11.204	1	2 49 47.50	2.2755	18 31 50.1	7.022
2	1 4 57.22	2.1856	11 17 28.9	11.139	2	2 52 4.08	2.2771	18 38 48.2	6.915
3	1 7 8.40	2.1873	11 28 35.3	11.073	3	2 54 20.75	2.2787	18 45 39.7	6.807
4	1 9 19.69	2.1891	11 39 37.7	11.006	4	2 56 37.52	2.2803	18 52 25.1	6.699
5	1 11 31.09	2.1908	11 50 36.0	10.937	5	2 58 54.38	2.2818	18 59 3.8	6.591
6	1 13 42.59	2.1926	12 1 30.2	10.868	6	3 1 11.34	2.2834	19 5 36.0	6.483
7	1 15 54.20	2.1944	12 12 20.2	10.797	7	3 3 28.39	2.2849	19 12 1.6	6.375
8	1 18 5.92	2.1962	12 23 5.9	10.726	8	3 5 45.52	2.2865	19 18 20.6	6.261
9	1 20 17.75	2.1981	12 33 47.3	10.653	9	3 8 2.73	2.2876	19 24 32.9	6.150
10	1 22 29.69	2.1999	12 44 24.3	10.580	10	3 10 20.03	2.2890	19 30 38.6	6.038
11	1 24 41.74	2.2018	12 54 56.9	10.506	11	3 12 37.41	2.2903	19 36 37.5	5.926
12	1 26 53.91	2.2037	13 5 25.0	10.430	12	3 14 54.87	2.2916	19 42 29.7	5.813
13	1 29 6.19	2.2057	13 15 48.5	10.354	13	3 17 12.40	2.2928	19 48 15.1	5.700
14	1 31 18.59	2.2076	13 26 7.5	10.277	14	3 19 30.01	2.2940	19 53 53.7	5.587
15	1 33 31.10	2.2095	13 36 21.8	10.199	15	3 21 47.68	2.2951	19 59 25.5	5.472
16	1 35 43.73	2.2115	13 46 31.4	10.120	16	3 24 5.42	2.2962	20 4 50.4	5.357
17	1 37 56.48	2.2135	13 56 36.2	10.040	17	3 26 23.22	2.2972	20 10 8.4	5.242
18	1 40 9.35	2.2155	14 6 36.2	9.959	18	3 28 41.09	2.2982	20 15 19.4	5.126
19	1 42 22.34	2.2175	14 16 31.3	9.877	19	3 30 59.01	2.2992	20 20 23.5	5.011
20	1 44 35.45	2.2195	14 26 21.5	9.794	20	3 33 16.99	2.3001	20 25 20.7	4.895
21	1 46 48.68	2.2215	14 36 6.6	9.710	21	3 35 35.02	2.3009	20 30 10.9	4.778
22	1 49 2.03	2.2235	14 45 46.7	9.626	22	3 37 53.10	2.3016	20 34 54.0	4.660
23	1 51 15.50	2.2255	N.14 55 21.7	9.541	23	3 40 11.22	2.3023	N.20 39 30.1	4.543
FRIDAY 2.					SUNDAY 4.				
0	1 53 29.09	2.2275	N.15 4 51.6	9.455	0	3 42 29.38	2.3030	N.20 43 59.2	4.426
1	1 55 42.80	2.2296	15 14 16.3	9.367	1	3 44 47.58	2.3036	20 48 21.2	4.307
2	1 57 56.64	2.2317	15 23 35.6	9.278	2	3 47 5.81	2.3041	20 52 36.1	4.188
3	2 0 10.60	2.2337	15 32 49.6	9.189	3	3 49 24.07	2.3046	20 56 43.8	4.069
4	2 2 24.68	2.2357	15 41 58.3	9.099	4	3 51 42.36	2.3051	21 0 44.4	3.951
5	2 4 38.88	2.2377	15 51 1.5	9.008	5	3 54 0.68	2.3055	21 4 37.9	3.832
6	2 6 53.20	2.2397	15 59 59.2	8.916	6	3 56 19.02	2.3058	21 8 24.2	3.719
7	2 9 7.64	2.2417	16 8 51.4	8.823	7	3 58 37.37	2.3060	21 12 3.3	3.599
8	2 11 22.20	2.2438	16 17 38.0	8.730	8	4 0 55.74	2.3062	21 15 35.2	3.479
9	2 13 36.89	2.2458	16 26 19.0	8.636	9	4 3 14.12	2.3063	21 19 0.0	3.353
10	2 15 51.70	2.2478	16 34 54.3	8.541	10	4 5 32.50	2.3063	21 22 17.6	3.228
11	2 18 6.62	2.2497	16 43 23.9	8.445	11	4 7 50.88	2.3063	21 25 27.9	3.111
12	2 20 21.66	2.2517	16 51 47.7	8.348	12	4 10 9.26	2.3063	21 28 30.9	2.990
13	2 22 36.82	2.2537	17 0 5.7	8.251	13	4 12 27.64	2.3061	21 31 26.7	2.870
14	2 24 52.10	2.2556	17 8 17.8	8.152	14	4 14 46.00	2.3059	21 34 15.3	2.749
15	2 27 7.49	2.2575	17 16 24.0	8.053	15	4 17 4.35	2.3057	21 36 56.6	2.628
16	2 29 23.00	2.2594	17 24 24.2	7.953	16	4 19 22.68	2.3054	21 39 30.6	2.507
17	2 31 38.62	2.2613	17 32 18.4	7.852	17	4 21 40.99	2.3050	21 41 57.4	2.386
18	2 33 54.35	2.2632	17 40 6.5	7.751	18	4 23 59.28	2.3046	21 44 16.9	2.264
19	2 36 10.20	2.2650	17 47 48.5	7.649	19	4 26 17.54	2.3040	21 46 29.1	2.143
20	2 38 26.15	2.2668	17 55 24.4	7.547	20	4 28 35.76	2.3033	21 48 34.0	2.022
21	2 40 42.21	2.2686	18 2 54.1	7.443	21	4 30 53.94	2.3027	21 50 31.7	1.901
22	2 42 58.38	2.2703	18 10 17.5	7.338	22	4 33 12.08	2.3020	21 52 22.1	1.779
23	2 45 14.65	2.2720	18 17 34.7	7.234	23	4 35 30.18	2.3012	21 54 5.2	1.658
24	2 47 31.02	2.2738	N.18 24 45.6	7.128	24	4 37 48.23	2.3003	N.21 55 41.1	1.537

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 5.					WEDNESDAY 7.				
0	4 37 48.23	2.3003	N.21° 55' 41.1"	1.537	0	6 26 1.09	2.1879	N.20° 54' 38.6"	3.919
1	4 40 6.22	2.2983	21 57 9.7	1.416	1	6 28 12.22	2.1837	20 50 40.4	4.081
2	4 42 24.15	2.2984	21 58 31.0	1.295	2	6 30 23.13	2.1800	20 46 36.1	4.122
3	4 44 42.03	2.2974	21 59 45.1	1.174	3	6 32 33.82	2.1764	20 42 25.8	4.221
4	4 46 59.84	2.2962	22 0 51.9	1.053	4	6 34 44.29	2.1728	20 38 9.6	4.390
5	4 49 17.58	2.2950	22 1 51.5	0.933	5	6 36 54.55	2.1692	20 33 47.4	4.419
6	4 51 35.24	2.2937	22 2 43.9	0.813	6	6 39 4.59	2.1655	20 29 19.3	4.517
7	4 53 52.83	2.2924	22 3 29.1	0.692	7	6 41 14.41	2.1617	20 24 45.4	4.613
8	4 56 10.33	2.2910	22 4 7.0	0.572	8	6 43 24.00	2.1580	20 20 5.7	4.710
9	4 58 27.75	2.2896	22 4 37.7	0.452	9	6 45 33.37	2.1542	20 15 20.2	4.806
10	5 0 45.08	2.2880	22 5 1.2	0.332	10	6 47 42.51	2.1504	20 10 29.0	4.900
11	5 3 2.31	2.2864	22 5 17.5	0.213	11	6 49 51.42	2.1467	20 5 32.2	4.983
12	5 5 19.45	2.2847	22 5 26.7	+0.094	12	6 52 0.11	2.1429	20 0 29.8	5.068
13	5 7 36.48	2.2830	22 5 28.8	-0.025	13	6 54 8.57	2.1391	19 55 21.8	5.179
14	5 9 53.41	2.2812	22 5 23.7	0.144	14	6 56 16.80	2.1352	19 50 8.3	5.272
15	5 12 10.23	2.2794	22 5 11.5	0.263	15	6 58 24.79	2.1313	19 44 49.2	5.363
16	5 14 26.94	2.2775	22 4 52.2	0.381	16	7 0 32.55	2.1274	19 39 24.7	5.453
17	5 16 43.53	2.2755	22 4 25.8	0.498	17	7 2 40.08	2.1236	19 33 54.8	5.543
18	5 19 0.00	2.2734	22 3 52.4	0.616	18	7 4 47.38	2.1197	19 28 19.5	5.632
19	5 21 16.34	2.2713	22 3 11.9	0.733	19	7 6 54.44	2.1158	19 22 38.9	5.720
20	5 23 32.55	2.2692	22 2 24.4	-0.849	20	7 9 1.27	2.1119	19 16 53.1	5.807
21	5 25 48.64	2.2670	22 1 30.0	0.965	21	7 11 7.87	2.1080	19 11 2.1	5.893
22	5 28 4.59	2.2647	22 0 28.6	1.082	22	7 13 14.23	2.1040	19 5 5.9	5.980
23	5 30 20.40	2.2623	N.21 59 20.2	1.198	23	7 15 20.35	2.1000	N.18 59 4.5	6.066
TUESDAY 6.					THURSDAY 8.				
0	5 32 36.06	2.2598	N.21 58 4.9	1.313	0	7 17 26.23	2.0961	N.18 52 58.0	6.150
1	5 34 51.58	2.2574	21 56 42.7	1.427	1	7 19 31.88	2.0922	18 46 46.5	6.233
2	5 37 6.95	2.2549	21 55 13.7	1.541	2	7 21 37.29	2.0882	18 40 30.0	6.316
3	5 39 22.17	2.2524	21 53 37.8	1.655	3	7 23 42.46	2.0842	18 34 8.6	6.397
4	5 41 37.24	2.2497	21 51 55.1	1.768	4	7 25 47.40	2.0803	18 27 42.3	6.478
5	5 43 52.14	2.2470	21 50 5.6	1.882	5	7 27 52.10	2.0764	18 21 11.2	6.558
6	5 46 6.88	2.2442	21 48 9.3	1.994	6	7 29 56.57	2.0725	18 14 35.3	6.638
7	5 48 21.45	2.2414	21 46 6.3	2.106	7	7 32 0.80	2.0686	18 7 54.6	6.718
8	5 50 35.85	2.2387	21 43 56.6	2.217	8	7 34 4.80	2.0647	18 1 9.1	6.797
9	5 52 50.09	2.2358	21 41 40.3	2.328	9	7 36 8.56	2.0607	17 54 18.9	6.875
10	5 55 4.15	2.2328	21 39 17.3	2.438	10	7 38 12.08	2.0568	17 47 24.1	6.951
11	5 57 18.03	2.2298	21 36 47.7	2.547	11	7 40 15.37	2.0529	17 40 24.8	7.027
12	5 59 31.73	2.2268	21 34 11.6	2.656	12	7 42 18.43	2.0490	17 33 20.9	7.102
13	6 1 45.25	2.2237	21 31 29.0	2.765	13	7 44 21.25	2.0451	17 26 12.6	7.176
14	6 3 58.58	2.2206	21 28 39.8	2.874	14	7 46 23.84	2.0412	17 18 59.8	7.250
15	6 6 11.72	2.2174	21 25 44.1	2.981	15	7 48 26.20	2.0374	17 11 42.6	7.323
16	6 8 24.67	2.2142	21 22 42.0	3.087	16	7 50 28.33	2.0336	17 4 21.0	7.395
17	6 10 37.42	2.2109	21 19 33.6	3.193	17	7 52 30.23	2.0297	16 56 55.2	7.466
18	6 12 49.98	2.2076	21 16 18.8	3.299	18	7 54 31.90	2.0259	16 49 25.1	7.537
19	6 15 2.34	2.2043	21 12 57.7	3.404	19	7 56 33.34	2.0221	16 41 50.8	7.607
20	6 17 14.50	2.2010	21 9 30.3	3.509	20	7 58 34.55	2.0183	16 34 12.3	7.676
21	6 19 26.46	2.1976	21 5 56.6	3.613	21	8 0 35.54	2.0146	16 26 29.7	7.744
22	6 21 38.21	2.1941	21 2 16.7	3.716	22	8 2 36.31	2.0109	16 18 43.0	7.812
23	6 23 49.75	2.1907	20 58 30.7	3.818	23	8 4 36.85	2.0071	16 10 52.3	7.879
24	6 26 1.09	2.1872	N.20 54 38.6	3.919	24	8 6 37.16	2.0034	N.16 2 57.6	7.945

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 9.					SUNDAY 11.				
0	8 6 37.16	2.0034	N. 16° 2' 57.6"	7.945	0	9 39 7.64	1.8863	N. 8° 39' 3.4"	10.392
1	8 8 37.25	1.9998	15 54 58.9	8.010	1	9 40 59.56	1.8845	8 28 44.9	10.394
2	8 10 37.13	1.9962	15 46 56.4	8.074	2	9 42 51.38	1.8828	8 18 24.5	10.357
3	8 12 36.79	1.9925	15 38 50.0	8.138	3	9 44 43.10	1.8819	8 8 2.1	10.389
4	8 14 36.23	1.9889	15 30 39.8	8.201	4	9 46 34.72	1.8806	7 57 37.8	10.420
5	8 16 35.46	1.9853	15 22 25.9	8.263	5	9 48 26.25	1.8800	7 47 11.7	10.451
6	8 18 34.47	1.9817	15 14 8.2	8.325	6	9 50 17.68	1.8864	7 36 43.7	10.481
7	8 20 33.27	1.9782	15 5 46.9	8.388	7	9 52 9.02	1.8850	7 26 14.0	10.510
8	8 22 31.86	1.9747	14 57 21.9	8.447	8	9 54 0.28	1.8836	7 15 42.5	10.539
9	8 24 30.24	1.9713	14 48 53.3	8.507	9	9 55 51.45	1.8823	7 5 9.3	10.567
10	8 26 28.42	1.9679	14 40 21.1	8.565	10	9 57 42.55	1.8810	6 54 34.4	10.595
11	8 28 26.39	1.9644	14 31 45.5	8.622	11	9 59 33.57	1.8797	6 43 57.9	10.623
12	8 30 24.15	1.9610	14 23 6.4	8.680	12	10 1 24.51	1.8784	6 33 19.7	10.650
13	8 32 21.71	1.9577	14 14 23.9	8.737	13	10 3 15.38	1.8773	6 22 39.9	10.675
14	8 34 19.08	1.9543	14 5 38.0	8.793	14	10 5 6.19	1.8763	6 11 58.7	10.699
15	8 36 16.25	1.9512	13 56 48.8	8.848	15	10 6 56.94	1.8753	6 1 16.0	10.724
16	8 38 13.23	1.9480	13 47 56.3	8.902	16	10 8 47.63	1.8743	5 50 31.8	10.749
17	8 40 10.01	1.9448	13 39 0.6	8.956	17	10 10 38.26	1.8734	5 39 46.1	10.773
18	8 42 6.60	1.9416	13 30 1.6	9.009	18	10 12 28.84	1.8726	5 28 59.0	10.796
19	8 44 3.00	1.9385	13 20 59.5	9.061	19	10 14 19.37	1.8718	5 18 10.6	10.818
20	8 45 59.22	1.9354	13 11 54.3	9.113	20	10 16 9.86	1.8711	5 7 20.8	10.841
21	8 47 55.25	1.9323	13 2 45.9	9.165	21	10 18 0.30	1.8703	4 56 29.7	10.862
22	8 49 51.10	1.9293	12 53 34.5	9.214	22	10 19 50.70	1.8697	4 45 37.4	10.882
23	8 51 46.77	1.9263	N. 12° 44' 20.2"	9.263	23	10 21 41.07	1.8692	N. 4° 34' 43.9"	10.903
SATURDAY 10.					MONDAY 12.				
0	8 53 42.26	1.9234	N. 12° 35' 2.9"	9.312	0	10 23 31.41	1.8687	N. 4° 23' 49.1"	10.923
1	8 55 37.58	1.9206	12 25 42.7	9.361	1	10 25 21.72	1.8683	4 12 53.1	10.941
2	8 57 32.73	1.9177	12 16 19.6	9.409	2	10 27 12.01	1.8679	4 1 56.1	10.959
3	8 59 27.70	1.9149	12 6 53.6	9.456	3	10 29 2.27	1.8675	3 50 58.0	10.977
4	9 1 22.51	1.9121	11 57 24.9	9.502	4	10 30 52.51	1.8673	3 39 58.8	10.995
5	9 3 17.15	1.9094	11 47 53.4	9.547	5	10 32 42.74	1.8671	3 28 58.6	11.012
6	9 5 11.63	1.9067	11 38 19.2	9.592	6	10 34 32.96	1.8669	3 17 57.4	11.028
7	9 7 5.95	1.9040	11 28 42.3	9.637	7	10 36 23.17	1.8668	3 6 55.2	11.045
8	9 9 0.11	1.9014	11 19 2.8	9.680	8	10 38 13.38	1.8668	2 55 52.0	11.061
9	9 10 54.12	1.8989	11 9 20.7	9.723	9	10 40 3.59	1.8668	2 44 47.9	11.075
10	9 12 47.98	1.8964	10 59 36.0	9.766	10	10 41 53.80	1.8669	2 33 43.0	11.088
11	9 14 41.69	1.8939	10 49 48.8	9.807	11	10 43 44.02	1.8671	2 22 37.3	11.102
12	9 16 35.25	1.8915	10 39 59.2	9.847	12	10 45 34.25	1.8673	2 11 30.8	11.114
13	9 18 28.67	1.8892	10 30 7.1	9.888	13	10 47 24.50	1.8676	2 0 23.6	11.127
14	9 20 21.95	1.8869	10 20 12.6	9.928	14	10 49 14.76	1.8678	1 49 15.6	11.139
15	9 22 15.09	1.8846	10 10 15.7	9.967	15	10 51 5.04	1.8682	1 38 6.9	11.150
16	9 24 8.10	1.8824	10 0 16.5	10.006	16	10 52 55.35	1.8687	1 26 57.6	11.161
17	9 26 0.98	1.8801	9 50 15.0	10.044	17	10 54 45.69	1.8693	1 15 47.6	11.172
18	9 27 53.72	1.8779	9 40 11.2	10.082	18	10 56 36.07	1.8699	1 4 37.0	11.181
19	9 29 46.33	1.8759	9 30 5.2	10.118	19	10 58 26.48	1.8705	0 53 25.9	11.189
20	9 31 38.83	1.8740	9 19 57.1	10.153	20	11 0 16.93	1.8713	0 42 14.3	11.196
21	9 33 31.21	1.8720	9 9 46.8	10.189	21	11 2 7.43	1.8721	0 31 2.2	11.206
22	9 35 23.47	1.8700	8 59 34.4	10.224	22	11 3 57.98	1.8729	0 19 49.6	11.213
23	9 37 15.61	1.8681	8 49 19.9	10.258	23	11 5 48.58	1.8738	N. 0° 8' 36.6"	11.219
24	9 39 7.64	1.8663	N. 8° 39' 3.4"	10.292	24	11 7 39.23	1.8747	S. 0° 2' 36.7"	11.225

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 13.					THURSDAY 15.				
0	11 7 39.23	1.8447	S. 0° 2' 36.7"	11.9285	0	12 38 30.65	1.9655	S. 8° 56' 32.8"	10.780
1	11 9 29.94	1.8457	0 13 50.4	11.931	1	12 40 28.70	1.9698	9 7 17.6	10.739
2	11 11 20.72	1.8468	0 25 4.4	11.936	2	12 42 27.00	1.9738	9 18 0.6	10.703
3	11 13 11.56	1.8479	0 36 18.7	11.941	3	12 44 25.56	1.9781	9 28 41.9	10.673
4	11 15 2.47	1.8491	0 47 33.3	11.944	4	12 46 24.37	1.9823	9 39 21.4	10.643
5	11 16 53.46	1.8504	0 58 48.0	11.947	5	12 48 23.43	1.9865	9 49 59.0	10.612
6	11 18 44.52	1.8517	1 10 2.9	11.950	6	12 50 22.75	1.9909	10 0 34.8	10.580
7	11 20 35.66	1.8531	1 21 18.0	11.952	7	12 52 22.34	1.9954	10 11 8.6	10.547
8	11 22 26.89	1.8546	1 32 33.1	11.953	8	12 54 22.20	1.9998	10 21 40.4	10.512
9	11 24 18.22	1.8562	1 43 48.3	11.953	9	12 56 22.32	2.0043	10 32 10.1	10.477
10	11 26 9.64	1.8577	1 55 3.5	11.953	10	12 58 22.71	2.0089	10 42 37.7	10.443
11	11 28 1.15	1.8593	2 6 18.7	11.953	11	13 0 23.39	2.0136	10 53 3.2	10.407
12	11 29 52.76	1.8611	2 17 33.9	11.952	12	13 2 24.35	2.0184	11 3 26.5	10.369
13	11 31 44.48	1.8629	2 28 49.0	11.950	13	13 4 25.60	2.0231	11 13 47.5	10.331
14	11 33 36.31	1.8647	2 40 3.9	11.948	14	13 6 27.13	2.0279	11 24 6.2	10.291
15	11 35 28.25	1.8666	2 51 18.7	11.945	15	13 8 28.95	2.0328	11 34 22.4	10.250
16	11 37 20.30	1.8686	3 2 33.3	11.941	16	13 10 31.07	2.0378	11 44 36.2	10.209
17	11 39 12.48	1.8707	3 13 47.6	11.937	17	13 12 33.49	2.0428	11 54 47.5	10.167
18	11 41 4.78	1.8728	3 25 1.7	11.932	18	13 14 36.20	2.0478	12 4 56.2	10.123
19	11 42 57.21	1.8749	3 36 15.5	11.927	19	13 16 39.22	2.0529	12 15 2.3	10.079
20	11 44 49.77	1.8771	3 47 28.9	11.920	20	13 18 42.55	2.0581	12 25 5.7	10.033
21	11 46 42.46	1.8793	3 58 41.9	11.913	21	13 20 46.19	2.0633	12 35 6.3	9.987
22	11 48 35.29	1.8817	4 9 54.5	11.906	22	13 22 50.15	2.0686	12 45 4.2	9.941
23	11 50 28.27	1.8843	S. 4° 21' 6.6"	11.196	23	13 24 54.42	2.0739	S. 12° 54' 59.2"	9.893
WEDNESDAY 14.					FRIDAY 16.				
0	11 52 21.40	1.8867	S. 4° 32' 18.2"	11.189	0	13 26 59.01	2.0792	S. 13° 4' 51.2"	9.843
1	11 54 14.68	1.8899	4 43 29.3	11.180	1	13 29 3.92	2.0846	13 14 40.2	9.799
2	11 56 8.11	1.8918	4 54 39.8	11.169	2	13 31 9.16	2.0901	13 24 26.2	9.741
3	11 58 1.70	1.8946	5 5 49.6	11.157	3	13 33 14.73	2.0956	13 34 9.1	9.689
4	11 59 55.46	1.8973	5 16 58.7	11.146	4	13 35 20.63	2.1011	13 43 48.8	9.634
5	12 1 49.38	1.9001	5 28 7.1	11.134	5	13 37 26.86	2.1067	13 53 25.2	9.579
6	12 3 43.47	1.9039	5 39 14.8	11.122	6	13 39 33.43	2.1123	14 2 58.3	9.523
7	12 5 37.73	1.9069	5 50 21.7	11.108	7	13 41 40.34	2.1180	14 12 28.0	9.467
8	12 7 32.18	1.9099	6 1 27.7	11.093	8	13 43 47.59	2.1237	14 21 54.3	9.409
9	12 9 26.81	1.9130	6 12 32.9	11.078	9	13 45 55.18	2.1294	14 31 17.1	9.350
10	12 11 21.62	1.9151	6 23 37.1	11.063	10	13 48 3.12	2.1352	14 40 36.3	9.289
11	12 13 16.62	1.9183	6 34 40.3	11.045	11	13 50 11.41	2.1411	14 49 51.8	9.227
12	12 15 11.82	1.9216	6 45 42.5	11.027	12	13 52 20.05	2.1470	14 59 3.6	9.165
13	12 17 7.21	1.9249	6 56 43.6	11.009	13	13 54 29.05	2.1529	15 8 11.6	9.102
14	12 19 2.80	1.9282	7 7 43.6	10.991	14	13 56 38.40	2.1588	15 17 15.8	9.037
15	12 20 58.60	1.9317	7 18 42.5	10.972	15	13 58 48.10	2.1647	15 26 16.0	8.970
16	12 22 54.61	1.9352	7 29 40.2	10.951	16	14 0 58.16	2.1707	15 35 12.2	8.903
17	12 24 50.83	1.9388	7 40 36.6	10.930	17	14 3 8.59	2.1768	15 44 4.4	8.835
18	12 26 47.27	1.9425	7 51 31.8	10.908	18	14 5 19.38	2.1829	15 52 52.4	8.765
19	12 28 43.93	1.9462	8 2 25.6	10.885	19	14 7 30.54	2.1890	16 1 36.2	8.694
20	12 30 40.81	1.9499	8 13 18.0	10.862	20	14 9 42.06	2.1951	16 10 15.7	8.622
21	12 32 37.92	1.9538	8 24 9.0	10.837	21	14 11 53.95	2.2012	16 18 50.8	8.548
22	12 34 35.26	1.9577	8 34 58.5	10.812	22	14 14 6.21	2.2074	16 27 21.5	8.474
23	12 36 32.84	1.9616	8 45 46.4	10.786	23	14 16 18.84	2.2137	16 35 47.7	8.398
24	12 38 30.65	1.9655	S. 8° 56' 32.8"	10.760	24	14 18 31.85	2.2199	S. 16° 44' 9.3"	8.322

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 17.					MONDAY 19.				
0	^h 14 ^m 18 ^s 31.85	2.3199	S. 16° 44' 9.3"	8.322	0	^h 16 ^m 12 ^s 11.41	2.5046	S. 21° 30' 51.3"	3.147
1	14 20 45.23	2.3261	16 52 26.3	8.243	1	16 14 41.83	2.5094	21 33 56.0	3.010
2	14 22 58.98	2.3323	17 0 38.5	8.163	2	16 17 12.54	2.5141	21 36 52.5	2.873
3	14 25 13.11	2.3386	17 8 45.9	8.083	3	16 19 43.52	2.5186	21 39 40.8	2.735
4	14 27 27.62	2.3449	17 16 48.5	8.002	4	16 22 14.77	2.5230	21 42 20.7	2.595
5	14 29 42.50	2.3512	17 24 46.1	7.918	5	16 24 46.28	2.5274	21 44 52.2	2.455
6	14 31 57.76	2.3575	17 32 38.6	7.833	6	16 27 18.05	2.5317	21 47 15.3	2.314
7	14 34 13.40	2.3638	17 40 26.0	7.748	7	16 29 50.08	2.5359	21 49 29.9	2.172
8	14 36 29.42	2.3701	17 48 8.3	7.661	8	16 32 22.36	2.5400	21 51 35.9	2.028
9	14 38 45.81	2.3764	17 55 45.3	7.573	9	16 34 54.88	2.5439	21 53 33.2	1.883
10	14 41 2.59	2.3826	18 3 17.0	7.489	10	16 37 27.63	2.5478	21 55 21.9	1.739
11	14 43 19.75	2.3889	18 10 43.2	7.391	11	16 40 0.62	2.5517	21 57 1.9	1.594
12	14 45 37.28	2.3954	18 18 3.9	7.299	12	16 42 33.83	2.5553	21 58 33.2	1.448
13	14 47 55.19	2.4018	18 25 19.1	7.206	13	16 45 7.26	2.5588	21 59 55.7	1.301
14	14 50 13.49	2.4082	18 32 28.6	7.111	14	16 47 40.89	2.5622	22 1 9.4	1.153
15	14 52 32.17	2.4145	18 39 32.4	7.015	15	16 50 14.72	2.5655	22 2 14.1	1.004
16	14 54 51.23	2.4207	18 46 30.4	6.917	16	16 52 48.75	2.5688	22 3 9.9	0.856
17	14 57 10.66	2.4270	18 53 22.5	6.819	17	16 55 22.98	2.5720	22 3 56.8	0.707
18	14 59 30.47	2.4333	19 0 8.7	6.720	18	16 57 57.39	2.5750	22 4 34.7	0.557
19	15 1 50.66	2.4396	19 6 48.9	6.619	19	17 0 31.98	2.5778	22 5 3.6	0.406
20	15 4 11.22	2.4458	19 13 23.0	6.517	20	17 3 6.73	2.5805	22 5 23.4	0.254
21	15 6 32.16	2.4521	19 19 50.9	6.413	21	17 5 41.64	2.5832	22 5 34.1	-0.102
22	15 8 53.47	2.4583	19 26 12.5	6.308	22	17 8 16.71	2.5857	22 5 35.7	+0.050
23	15 11 15.16	2.4646	S. 19 32 27.8	6.201	23	17 10 51.92	2.5880	S. 22 5 28.1	0.202
SUNDAY 18.					TUESDAY 20.				
0	15 13 37.22	2.4707	S. 19 38 36.6	6.093	0	17 13 27.27	2.5903	S. 22 5 11.4	0.355
1	15 15 59.64	2.4768	19 44 38.9	5.984	1	17 16 2.76	2.5935	22 4 45.5	0.508
2	15 18 22.43	2.4829	19 50 34.7	5.875	2	17 18 38.37	2.5944	22 4 10.4	0.662
3	15 20 45.59	2.4890	19 56 23.9	5.763	3	17 21 14.09	2.5963	22 3 26.0	0.816
4	15 23 9.11	2.4950	20 2 6.3	5.650	4	17 23 49.92	2.5981	22 2 32.4	0.970
5	15 25 32.99	2.4011	20 7 41.9	5.537	5	17 26 25.86	2.5997	22 1 29.6	1.124
6	15 27 57.24	2.4071	20 13 10.7	5.422	6	17 29 1.89	2.6012	22 0 17.5	1.279
7	15 30 21.84	2.4130	20 18 32.5	5.305	7	17 31 38.00	2.6026	21 58 56.1	1.434
8	15 32 46.79	2.4187	20 23 47.3	5.187	8	17 34 14.20	2.6039	21 57 25.4	1.589
9	15 35 12.09	2.4246	20 28 55.0	5.068	9	17 36 50.47	2.6050	21 55 45.4	1.744
10	15 37 37.74	2.4304	20 33 55.5	4.948	10	17 39 26.80	2.6060	21 53 56.1	1.899
11	15 40 3.74	2.4362	20 38 48.8	4.827	11	17 42 3.19	2.6068	21 51 57.5	2.054
12	15 42 30.08	2.4418	20 43 34.8	4.705	12	17 44 39.62	2.6075	21 49 49.6	2.210
13	15 44 56.76	2.4474	20 48 13.4	4.582	13	17 47 16.09	2.6082	21 47 32.3	2.365
14	15 47 23.77	2.4529	20 52 44.6	4.457	14	17 49 52.60	2.6087	21 45 5.8	2.519
15	15 49 51.11	2.4584	20 57 8.2	4.330	15	17 52 29.13	2.6090	21 42 30.0	2.674
16	15 52 18.78	2.4638	21 1 24.2	4.203	16	17 55 5.67	2.6091	21 39 44.9	2.829
17	15 54 46.77	2.4691	21 5 32.6	4.076	17	17 57 42.23	2.6093	21 36 50.5	2.984
18	15 57 15.08	2.4744	21 9 33.3	3.947	18	18 0 18.79	2.6092	21 33 46.8	3.138
19	15 59 43.70	2.4797	21 13 26.2	3.816	19	18 2 55.34	2.6091	21 30 33.9	3.293
20	16 2 12.64	2.4849	21 17 11.2	3.683	20	18 5 31.88	2.6088	21 27 11.7	3.447
21	16 4 41.89	2.4900	21 20 48.2	3.551	21	18 8 8.40	2.6084	21 23 40.3	3.600
22	16 7 11.44	2.4949	21 24 17.3	3.418	22	18 10 44.89	2.6078	21 19 59.7	3.753
23	16 9 41.28	2.4997	21 27 38.4	3.283	23	18 13 21.34	2.6072	21 16 9.9	3.906
24	16 12 11.41	2.5046	S. 21 30 51.3	3.147	24	18 15 57.75	2.6064	S. 21 12 11.0	4.058

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 21.					FRIDAY 23.				
0	18 15 57.75	2.6064	S. 21° 12' 11.0"	4.058	0	20 18 14.49	2.4506	S. 15° 17' 16.2"	10.396
1	18 18 34.11	2.6055	21 8 2.9	4.211	1	20 20 41.93	2.4551	15 6 55.5	10.393
2	18 21 10.41	2.6044	21 3 45.7	4.362	2	20 23 9.10	2.4507	14 56 29.0	10.489
3	18 23 46.64	2.6033	20 59 19.5	4.512	3	20 25 36.01	2.4469	14 45 56.8	10.584
4	18 26 22.80	2.6021	20 54 44.3	4.663	4	20 28 2.65	2.4417	14 35 18.9	10.677
5	18 28 58.89	2.6007	20 50 0.0	4.813	5	20 30 29.01	2.4371	14 24 35.5	10.769
6	18 31 34.89	2.5992	20 45 6.7	4.962	6	20 32 55.10	2.4326	14 13 46.6	10.860
7	18 34 10.79	2.5975	20 40 4.5	5.110	7	20 35 20.92	2.4281	14 2 52.3	10.948
8	18 36 46.59	2.5958	20 34 53.5	5.258	8	20 37 46.47	2.4237	13 51 52.8	11.035
9	18 39 22.29	2.5941	20 29 33.6	5.405	9	20 40 11.76	2.4192	13 40 48.1	11.121
10	18 41 57.88	2.5923	20 24 4.9	5.551	10	20 42 36.78	2.4147	13 29 38.3	11.205
11	18 44 33.35	2.5901	20 18 27.5	5.697	11	20 45 1.52	2.4101	13 18 23.5	11.287
12	18 47 8.69	2.5879	20 12 41.3	5.842	12	20 47 25.99	2.4056	13 7 3.9	11.367
13	18 49 43.90	2.5857	20 6 46.5	5.985	13	20 49 50.19	2.4011	12 55 39.5	11.447
14	18 52 18.97	2.5833	20 0 43.1	6.128	14	20 52 14.12	2.3966	12 44 10.3	11.524
15	18 54 53.90	2.5809	19 54 31.1	6.271	15	20 54 37.78	2.3921	12 32 36.6	11.599
16	18 57 28.68	2.5783	19 48 10.6	6.412	16	20 57 1.17	2.3877	12 20 58.4	11.673
17	19 0 3.30	2.5757	19 41 41.7	6.552	17	20 59 24.30	2.3832	12 9 15.8	11.746
18	19 2 37.76	2.5731	19 35 4.4	6.691	18	21 1 47.16	2.3787	11 57 28.9	11.818
19	19 5 12.05	2.5702	19 28 18.8	6.829	19	21 4 9.75	2.3743	11 45 37.7	11.867
20	19 7 46.18	2.5673	19 21 24.9	6.967	20	21 6 32.08	2.3700	11 33 42.5	11.953
21	19 10 20.13	2.5643	19 14 22.8	7.103	21	21 8 54.15	2.3656	11 21 43.3	12.019
22	19 12 53.89	2.5611	19 7 12.6	7.238	22	21 11 15.95	2.3612	11 9 40.2	12.084
23	19 15 27.46	2.5580	S. 18 59 54.3	7.372	23	21 13 37.49	2.3568	S. 10 57 33.2	12.147
THURSDAY 22.					SATURDAY 24.				
0	19 18 0.85	2.5548	S. 18 52 28.0	7.504	0	21 15 58.77	2.3525	S. 10 45 22.5	12.208
1	19 20 34.04	2.5514	18 44 53.8	7.636	1	21 18 19.79	2.3482	10 33 8.2	12.267
2	19 23 7.02	2.5480	18 37 11.7	7.767	2	21 20 40.56	2.3440	10 20 50.4	12.326
3	19 25 39.80	2.5446	18 29 21.8	7.896	3	21 23 1.07	2.3398	10 8 29.1	12.383
4	19 28 12.37	2.5411	18 21 24.2	8.023	4	21 25 21.33	2.3356	9 56 4.5	12.438
5	19 30 44.73	2.5375	18 13 19.0	8.149	5	21 27 41.34	2.3314	9 43 36.6	12.491
6	19 33 16.87	2.5338	18 5 6.3	8.274	6	21 30 1.09	2.3272	9 31 5.6	12.542
7	19 35 48.79	2.5301	17 56 46.1	8.399	7	21 32 20.60	2.3231	9 18 31.6	12.592
8	19 38 20.48	2.5263	17 48 18.4	8.522	8	21 34 39.86	2.3190	9 5 54.6	12.641
9	19 40 51.94	2.5224	17 39 43.4	8.643	9	21 36 58.88	2.3150	8 53 14.7	12.688
10	19 43 23.17	2.5186	17 31 1.2	8.763	10	21 39 17.66	2.3110	8 40 32.1	12.733
11	19 45 54.17	2.5147	17 22 11.8	8.882	11	21 41 36.20	2.3071	8 27 46.8	12.777
12	19 48 24.93	2.5106	17 13 15.3	9.000	12	21 43 54.51	2.3032	8 14 58.9	12.819
13	19 50 55.44	2.5065	17 4 11.8	9.116	13	21 46 12.58	2.2993	8 2 8.5	12.859
14	19 53 25.71	2.5025	16 55 1.4	9.231	14	21 48 30.42	2.2955	7 49 15.8	12.897
15	19 55 55.74	2.4984	16 45 44.1	9.344	15	21 50 48.04	2.2917	7 36 20.8	12.935
16	19 58 25.52	2.4942	16 36 20.1	9.455	16	21 53 5.43	2.2880	7 23 23.6	12.972
17	20 0 55.04	2.4899	16 26 49.5	9.565	17	21 55 22.60	2.2843	7 10 24.2	13.007
18	20 3 24.31	2.4857	16 17 12.3	9.674	18	21 57 39.54	2.2806	6 57 22.8	13.039
19	20 5 53.32	2.4814	16 7 28.6	9.782	19	21 59 56.27	2.2770	6 44 19.5	13.071
20	20 8 22.08	2.4771	15 57 38.5	9.887	20	22 2 12.78	2.2734	6 31 14.3	13.101
21	20 10 50.58	2.4727	15 47 42.2	9.990	21	22 4 20.08	2.2699	6 18 7.4	13.129
22	20 13 18.81	2.4683	15 37 39.7	10.093	22	22 6 45.17	2.2665	6 4 58.8	13.156
23	20 15 46.78	2.4640	15 27 31.0	10.196	23	22 9 1.06	2.2631	5 51 48.7	13.181
24	20 18 14.49	2.4596	S. 15 17 16.2	10.296	24	22 11 16.74	2.2597	S. 5 38 37.1	13.205

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 25.					TUESDAY 27.				
0	22 11 16.74	2.9597	S. 5 38 37.1	13.375	0	23 56 57.94	2.1665	N. 4 56 40.6	12.777
1	22 13 32.22	2.9564	5 25 24.1	13.397	1	23 59 7.91	2.1659	5 9 26.1	12.739
2	22 15 47.51	2.9532	5 12 9.8	13.348	2	0 1 17.85	2.1655	5 22 9.3	12.700
3	22 18 2.61	2.9501	4 58 54.3	13.366	3	0 3 27.77	2.1652	5 34 50.1	12.660
4	22 20 17.52	2.9469	4 45 37.6	13.387	4	0 5 37.67	2.1648	5 47 28.5	12.618
5	22 22 32.24	2.9438	4 32 19.9	13.303	5	0 7 47.55	2.1645	6 0 4.3	12.575
6	22 24 46.77	2.9407	4 19 1.3	13.318	6	0 9 57.41	2.1642	6 12 37.5	12.531
7	22 27 1.12	2.9378	4 5 41.8	13.339	7	0 12 7.25	2.1640	6 25 8.0	12.487
8	22 29 15.30	2.9349	3 52 21.5	13.344	8	0 14 17.09	2.1639	6 37 35.9	12.442
9	22 31 29.31	2.9321	3 39 0.5	13.355	9	0 16 26.92	2.1638	6 50 1.0	12.395
10	22 33 43.15	2.9292	3 25 38.9	13.364	10	0 18 36.74	2.1638	7 2 23.3	12.347
11	22 35 56.82	2.9264	3 12 16.8	13.372	11	0 20 46.57	2.1638	7 14 42.6	12.297
12	22 38 10.32	2.9237	2 58 54.2	13.379	12	0 22 56.40	2.1639	7 26 58.9	12.247
13	22 40 23.66	2.9211	2 45 31.3	13.384	13	0 25 6.24	2.1640	7 39 12.2	12.197
14	22 42 36.85	2.9186	2 32 8.1	13.389	14	0 27 16.08	2.1641	7 51 22.5	12.145
15	22 44 49.89	2.9161	2 18 44.6	13.392	15	0 29 25.93	2.1643	8 3 29.6	12.092
16	22 47 2.78	2.9137	2 5 21.0	13.393	16	0 31 35.80	2.1646	8 15 33.5	12.038
17	22 49 15.53	2.9112	1 51 57.4	13.393	17	0 33 45.68	2.1649	8 27 34.2	11.984
18	22 51 28.13	2.9088	1 38 33.8	13.392	18	0 35 55.58	2.1653	8 39 31.6	11.928
19	22 53 40.59	2.9066	1 25 10.4	13.389	19	0 38 5.51	2.1657	8 51 25.6	11.871
20	22 55 52.92	2.9044	1 11 47.1	13.386	20	0 40 15.46	2.1661	9 3 16.2	11.813
21	22 58 5.12	2.9023	0 58 24.1	13.381	21	0 42 25.44	2.1666	9 15 3.2	11.754
22	23 0 17.19	2.9003	0 45 1.4	13.374	22	0 44 35.45	2.1671	9 26 46.7	11.696
23	23 2 29.14	2.1981	S. 0 31 39.2	13.366	23	0 46 45.49	2.1676	N. 9 38 26.7	11.636
MONDAY 26.					WEDNESDAY 28.				
0	23 4 40.96	2.1960	S. 0 18 17.5	13.357	0	0 48 55.56	2.1682	N. 9 50 3.0	11.574
1	23 6 52.66	2.1949	S. 0 4 56.4	13.347	1	0 51 5.67	2.1689	10 1 35.6	11.512
2	23 9 4.26	2.1924	N. 0 8 24.1	13.335	2	0 53 15.82	2.1696	10 13 4.4	11.448
3	23 11 15.75	2.1906	0 21 43.8	13.322	3	0 55 26.02	2.1703	10 24 29.3	11.383
4	23 13 27.13	2.1888	0 35 2.7	13.308	4	0 57 36.26	2.1711	10 35 50.3	11.318
5	23 15 38.41	2.1871	0 48 20.8	13.293	5	0 59 46.55	2.1719	10 47 7.5	11.253
6	23 17 49.58	2.1854	1 1 37.9	13.276	6	1 1 56.89	2.1727	10 58 20.7	11.186
7	23 20 0.66	2.1839	1 14 53.9	13.258	7	1 4 7.28	2.1736	11 9 29.8	11.118
8	23 22 11.65	2.1825	1 28 8.9	13.240	8	1 6 17.72	2.1745	11 20 34.8	11.049
9	23 24 22.56	2.1811	1 41 22.7	13.219	9	1 8 28.22	2.1754	11 31 35.7	10.980
10	23 26 33.38	2.1797	1 54 35.2	13.197	10	1 10 38.77	2.1764	11 42 32.4	10.909
11	23 28 44.12	2.1783	2 7 46.4	13.175	11	1 12 49.39	2.1775	11 53 24.8	10.838
12	23 30 54.77	2.1769	2 20 56.2	13.152	12	1 15 0.07	2.1785	12 4 13.0	10.767
13	23 33 5.35	2.1758	2 34 4.6	13.127	13	1 17 10.81	2.1796	12 14 56.8	10.693
14	23 35 15.87	2.1747	2 47 11.4	13.100	14	1 19 21.62	2.1807	12 25 36.1	10.619
15	23 37 26.32	2.1736	3 0 16.6	13.073	15	1 21 32.50	2.1818	12 36 11.0	10.544
16	23 39 36.70	2.1726	3 13 20.2	13.046	16	1 23 43.44	2.1829	12 46 41.4	10.468
17	23 41 47.03	2.1717	3 26 22.1	13.016	17	1 25 54.45	2.1842	12 57 7.2	10.392
18	23 43 57.30	2.1708	3 39 22.1	12.985	18	1 28 5.54	2.1854	13 7 28.4	10.314
19	23 46 7.52	2.1699	3 52 20.3	12.953	19	1 30 16.70	2.1867	13 17 44.9	10.236
20	23 48 17.69	2.1691	4 5 16.5	12.920	20	1 32 27.94	2.1879	13 27 56.7	10.157
21	23 50 27.81	2.1683	4 18 10.7	12.886	21	1 34 39.25	2.1892	13 38 3.8	10.078
22	23 52 37.89	2.1677	4 31 2.8	12.851	22	1 36 50.61	2.1905	13 48 6.1	9.997
23	23 54 47.93	2.1671	4 43 52.8	12.815	23	1 39 2.11	2.1918	13 58 3.5	9.916
24	23 56 57.94	2.1665	N. 4 56 40.6	12.777	24	1 41 13.65	2.1931	N. 14 7 56.0	9.834

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.																									
THURSDAY 29.					SATURDAY 31.																													
0	1 ^h 41 ^m 13.65 ^s	2.1931	N.14° 7' 56.0"	9.834	0	3 ^h 28 ^m 8.83 ^s	2.2582	N.20° 11' 54.1"	5.099																									
1	1 43 25.28	2.1945	14 17 43.6	9.751	1	3 30 24.35	2.2599	20 16 56.7	4.987																									
2	1 45 36.99	2.1959	14 27 26.1	9.667	2	3 32 39.93	2.2601	20 21 52.6	4.875																									
3	1 47 48.79	2.1973	14 37 3.6	9.582	3	3 34 55.56	2.2609	20 26 41.7	4.762																									
4	1 50 0.67	2.1987	14 46 36.0	9.497	4	3 37 11.24	2.2616	20 31 24.1	4.650																									
5	1 52 12.63	2.2001	14 56 3.3	9.411	5	3 39 26.96	2.2623	20 35 59.7	4.537																									
6	1 54 24.68	2.2016	15 5 25.4	9.394	6	3 41 42.72	2.2630	20 40 28.5	4.423																									
7	1 56 36.82	2.2031	15 14 42.2	9.337	7	3 43 58.52	2.2637	20 44 50.5	4.310																									
8	1 58 49.05	2.2045	15 23 53.8	9.149	8	3 46 14.36	2.2643	20 49 5.7	4.196																									
9	2 1 1.36	2.2059	15 33 0.1	9.060	9	3 48 30.24	2.2649	20 53 14.0	4.082																									
10	2 3 13.76	2.2074	15 42 1.0	8.970	10	3 50 46.15	2.2654	20 57 15.5	3.967																									
11	2 5 26.25	2.2089	15 50 56.5	8.879	11	3 53 2.09	2.2659	21 1 10.1	3.852																									
12	2 7 38.83	2.2104	15 59 46.5	8.787	12	3 55 18.06	2.2663	21 4 57.8	3.737																									
13	2 9 51.50	2.2119	16 8 31.0	8.696	13	3 57 34.05	2.2667	21 8 38.6	3.622																									
14	2 12 4.26	2.2134	16 17 10.0	8.604	14	3 59 50.06	2.2671	21 12 12.5	3.507																									
15	2 14 17.11	2.2149	16 25 43.5	8.511	15	4 2 6.10	2.2674	21 15 39.5	3.392																									
16	2 16 30.05	2.2164	16 34 11.3	8.417	16	4 4 22.15	2.2676	21 18 59.5	3.276																									
17	2 18 43.08	2.2179	16 42 33.5	8.322	17	4 6 38.21	2.2678	21 22 12.6	3.160																									
18	2 20 56.20	2.2194	16 50 50.0	8.227	18	4 8 54.29	2.2680	21 25 18.7	3.044																									
19	2 23 9.41	2.2209	16 59 0.7	8.130	19	4 11 10.37	2.2680	21 28 17.8	2.928																									
20	2 25 22.71	2.2224	17 7 5.6	8.034	20	4 13 26.45	2.2681	21 31 10.0	2.812																									
21	2 27 36.10	2.2239	17 15 4.8	7.937	21	4 15 42.54	2.2681	21 33 55.2	2.695																									
22	2 29 49.58	2.2254	17 22 58.1	7.839	22	4 17 58.62	2.2679	21 36 33.4	2.578																									
23	2 32 3.15	2.2269	N.17 30 45.5	7.740	23	4 20 14.69	2.2678	N.21 39 4.6	2.461																									
FRIDAY 30.					SUNDAY, JANUARY 1, 1882.																													
0	2 34 16.81	2.2284	N.17 38 26.9	7.640	0	4 22 30.76	2.2677	N.21 41 28.7	2.344																									
1	2 36 30.56	2.2298	17 46 2.3	7.541	PHASES OF THE MOON.																													
2	2 38 44.39	2.2312	17 53 31.8	7.442																														
3	2 40 58.31	2.2327	18 0 55.3	7.341																														
4	2 43 12.32	2.2342	18 8 12.7	7.238																														
5	2 45 26.41	2.2356	18 15 23.9	7.136	<table><tr><td></td><td></td><td>d</td><td>h</td><td>m</td></tr><tr><td>○ Full Moon,</td><td>. . .</td><td>5</td><td>5</td><td>13.8</td></tr><tr><td>☾ Last Quarter,</td><td>. .</td><td>13</td><td>8</td><td>4.8</td></tr><tr><td>● New Moon,</td><td>. . .</td><td>20</td><td>17</td><td>7.1</td></tr><tr><td>☽ First Quarter,</td><td>. .</td><td>27</td><td>8</td><td>41.7</td></tr></table>							d	h	m	○ Full Moon,	. . .	5	5	13.8	☾ Last Quarter,	. .	13	8	4.8	● New Moon,	. . .	20	17	7.1	☽ First Quarter,	. .	27	8	41.7
		d	h	m																														
○ Full Moon,	. . .	5	5	13.8																														
☾ Last Quarter,	. .	13	8	4.8																														
● New Moon,	. . .	20	17	7.1																														
☽ First Quarter,	. .	27	8	41.7																														
6	2 47 40.59	2.2370	18 22 29.0	7.033	<table><tr><td></td><td></td><td>d</td><td>h</td><td></td></tr><tr><td>☾ Apogee,</td><td>.</td><td>10</td><td>21.9</td><td></td></tr><tr><td>☾ Perigee,</td><td>.</td><td>22</td><td>17.1</td><td></td></tr></table>							d	h		☾ Apogee,	10	21.9		☾ Perigee,	22	17.1											
		d	h																															
☾ Apogee,	10	21.9																															
☾ Perigee,	22	17.1																															
7	2 49 54.85	2.2384	18 29 27.9	6.930																														
8	2 52 9.20	2.2398	18 36 20.6	6.827																														
9	2 54 23.63	2.2411	18 43 7.1	6.723																														
10	2 56 38.14	2.2424	18 49 47.3	6.618																														
11	2 58 52.72	2.2437	18 56 21.2	6.512																														
12	3 1 7.38	2.2450	19 2 48.7	6.406																														
13	3 3 22.12	2.2463	19 9 9.9	6.299																														
14	3 5 36.93	2.2475	19 15 24.6	6.192																														
15	3 7 51.82	2.2487	19 21 32.9	6.085																														
16	3 10 6.78	2.2499	19 27 34.8	5.977																														
17	3 12 21.81	2.2511	19 33 30.2	5.869																														
18	3 14 36.91	2.2522	19 39 19.1	5.760																														
19	3 16 52.08	2.2533	19 45 1.4	5.651																														
20	3 19 7.31	2.2543	19 50 37.2	5.542																														
21	3 21 22.60	2.2553	19 56 6.4	5.431																														
22	3 23 37.95	2.2563	20 1 28.9	5.320																														
23	3 25 53.36	2.2573	20 6 44.8	5.210																														
24	3 28 8.83	2.2582	N.20 11 54.1	5.099																														

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Fomalhaut	W.	51° 36' 21"	3285	53° 0' 50"	3255	54° 25' 54"	3230	55° 51' 28"	3206
	α Pegasi	W.	29 52 26	3040	31 21 49	2993	32 52 10	2954	34 23 20	2922
	Jupiter	E.	31 3 53	2448	29 21 27	2458	27 39 14	2468	25 57 16	2480
	Aldebaran	E.	50 50 42	2497	49 9 25	2506	47 28 20	2515	45 47 27	2524
	Mars	E.	85 51 31	2419	84 8 23	2425	82 25 24	2432	80 42 35	2438
	Pollux	E.	92 55 56	2531	91 15 26	2539	89 35 7	2546	87 54 58	2553
2	Fomalhaut	W.	63 5 7	3130	64 32 40	3120	66 0 25	3113	67 28 19	3107
	α Pegasi	W.	42 7 33	2823	43 41 31	2813	45 15 42	2805	46 50 4	2798
	Aldebaran	E.	37 26 27	2577	35 47 1	2589	34 7 51	2598	32 28 59	2617
	Mars	E.	72 10 53	2474	70 29 3	2481	68 47 23	2489	67 5 54	2496
	Pollux	E.	79 36 45	2591	77 57 38	2600	76 18 43	2610	74 40 1	2618
3	Fomalhaut	W.	74 49 8	3096	76 17 23	3087	77 45 36	3099	79 13 47	3101
	α Pegasi	W.	54 43 24	2785	56 18 11	2786	57 52 57	2788	59 27 41	2790
	Mars	E.	58 41 14	2538	57 0 53	2547	55 20 45	2556	53 40 50	2566
	Pollux	E.	66 29 37	2666	64 52 12	2678	63 15 2	2689	61 38 7	2700
	Regulus	E.	103 9 8	2604	101 30 19	2613	99 51 42	2621	98 13 16	2629
4	α Pegasi	W.	67 20 18	2811	68 54 31	2817	70 28 37	2823	72 2 35	2829
	α Arietis	W.	23 43 41	2853	25 17 0	2858	26 50 38	2868	28 24 29	2892
	Saturn	W.	21 51 55	2769	23 27 3	2762	25 2 21	2757	26 37 45	2755
	Mars	E.	45 24 34	2617	43 46 2	2628	42 7 45	2640	40 29 44	2658
	Pollux	E.	53 37 29	2763	52 2 13	2777	50 27 15	2792	48 52 37	2808
	Regulus	E.	90 4 0	2674	88 26 45	2684	86 49 43	2692	85 12 53	2701
5	α Arietis	W.	36 14 46	2821	37 48 46	2825	39 22 42	2828	40 56 33	2834
	Saturn	W.	34 34 38	2769	36 9 46	2775	37 44 47	2780	39 19 41	2786
	Jupiter	W.	22 41 17	2729	24 17 19	2735	25 53 13	2741	27 28 58	2748
	Mars	E.	32 24 5	2724	30 47 57	2741	29 12 11	2760	27 36 50	2779
	Pollux	E.	41 4 53	2898	39 32 32	2920	38 0 39	2944	36 29 16	2969
	Regulus	E.	77 11 56	2751	75 36 24	2761	74 1 5	2772	72 26 0	2782
6	α Arietis	W.	48 43 57	2866	50 17 0	2873	51 49 53	2881	53 22 36	2889
	Saturn	W.	47 11 51	2825	48 45 46	2833	50 19 31	2842	51 53 4	2851
	Jupiter	W.	35 25 17	2788	37 0 0	2797	38 34 32	2806	40 8 52	2815
	Regulus	E.	64 33 58	2835	63 0 15	2845	61 26 46	2856	59 53 31	2867
7	α Arietis	W.	61 3 39	2930	62 35 20	2939	64 6 50	2946	65 38 10	2955
	Saturn	W.	59 38 2	2894	61 10 28	2903	62 42 43	2912	64 14 46	2921
	Jupiter	W.	47 57 35	2861	49 30 44	2870	51 3 41	2879	52 36 27	2888
	Aldebaran	W.	28 1 43	2977	29 32 25	2977	31 3 6	2980	32 33 44	2984
	Regulus	E.	52 10 47	2922	50 38 56	2933	49 7 19	2944	47 35 56	2956
	Spica	E.	106 0 3	2989	104 27 30	2999	102 55 10	2999	101 23 2	2918
8	α Arietis	W.	73 12 12	2996	74 42 30	3004	76 12 38	3011	77 42 37	3019
	Saturn	W.	71 52 19	2963	73 23 18	2971	74 54 7	2979	76 24 46	2987
	Jupiter	W.	60 17 27	2931	61 49 7	2939	63 20 36	2947	64 51 55	2955
	Aldebaran	W.	40 5 34	3008	41 35 37	3014	43 5 33	3019	44 35 22	3025
	Regulus	E.	40 2 37	3014	38 32 41	3025	37 2 59	3038	35 33 33	3050
	Spica	E.	93 45 17	2962	92 14 17	2970	90 43 27	2978	89 12 47	2987
9	Saturn	W.	83 55 41	3022	85 25 26	3028	86 55 4	3034	88 24 34	3040

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Fomalhaut W.	57 17 30	3186	58 43 56	3168	60 10 43	3154	61 37 47	3141
	α Pegasi W.	35 55 11	2894	37 27 37	2879	39 0 32	2859	40 33 52	2836
	Jupiter E.	24 15 34	2491	22 34 8	2504	20 53 0	2519	19 12 13	2535
	Aldebaran E.	44 6 47	2534	42 26 20	2543	40 46 7	2554	39 6 9	2566
	Mars E.	78 59 55	2445	77 17 25	2452	75 35 4	2459	73 52 53	2467
	Pollux E.	86 14 59	2561	84 35 10	2568	82 55 31	2576	81 16 3	2583
2	Fomalhaut W.	68 56 20	3102	70 24 27	3098	71 52 39	3096	73 20 53	3096
	α Pegasi W.	48 24 34	2793	49 59 11	2789	51 33 53	2787	53 8 38	2786
	Aldebaran E.	30 50 27	2632	29 12 16	2649	27 34 28	2669	25 57 6	2689
	Mars E.	65 24 35	2504	63 43 27	2512	62 2 31	2521	60 21 47	2529
	Pollux E.	73 1 31	2697	71 23 13	2637	69 45 8	2646	68 7 16	2656
3	Fomalhaut W.	80 41 55	3105	82 9 58	3111	83 37 54	3117	85 5 43	3124
	α Pegasi W.	61 2 22	2793	62 36 59	2797	64 11 31	2801	65 45 58	2806
	Mars E.	52 1 8	2575	50 21 39	2585	48 42 23	2595	47 3 21	2606
	Pollux E.	60 1 27	2711	58 25 2	2724	56 48 54	2737	55 13 3	2750
	Regulus E.	96 35 1	2638	94 56 58	2647	93 19 7	2656	91 41 28	2664
4	α Pegasi W.	73 36 25	2836	75 10 6	2844	76 43 37	2852	78 16 57	2861
	α Arietis W.	29 58 28	2618	31 32 32	2617	33 6 38	2618	34 40 43	2619
	Saturn W.	28 13 12	2755	29 48 39	2757	31 24 3	2760	32 59 23	2764
	Mars E.	38 52 0	2665	37 14 33	2678	35 37 24	2692	34 0 34	2708
	Pollux E.	47 18 20	2695	45 44 24	2692	44 10 50	2699	42 37 39	2709
	Regulus E.	83 36 15	2711	81 59 50	2722	80 23 39	2732	78 47 41	2741
5	α Arietis W.	42 30 17	2639	44 3 54	2645	45 37 24	2652	47 10 45	2659
	Saturn W.	40 54 27	2794	42 29 3	2801	44 3 29	2809	45 37 45	2817
	Jupiter W.	29 4 34	2756	30 40 0	2763	32 15 16	2771	33 50 22	2779
	Mars E.	26 1 55	2609	24 27 30	2608	22 53 39	2618	21 20 26	2623
	Pollux E.	34 58 25	2697	33 28 8	2696	31 58 28	2690	30 29 29	2696
	Regulus E.	70 51 8	2798	69 16 30	2803	67 42 6	2813	66 7 55	2824
6	α Arietis W.	54 55 9	2697	56 27 32	2695	57 59 45	2693	59 31 47	2691
	Saturn W.	53 26 26	2859	54 59 37	2868	56 32 37	2877	58 5 25	2886
	Jupiter W.	41 43 0	2625	43 16 56	2633	44 50 41	2642	46 24 14	2652
	Regulus E.	58 20 30	2678	56 47 43	2689	55 15 10	2691	53 42 52	2691
7	α Arietis W.	67 9 19	2663	68 40 18	2672	70 11 6	2680	71 41 44	2688
	Saturn W.	65 46 38	2830	67 18 19	2838	68 49 50	2846	70 21 10	2855
	Jupiter W.	54 9 1	2697	55 41 24	2695	57 13 36	2694	58 45 37	2693
	Aldebaran W.	34 4 17	2608	35 34 45	2602	37 5 8	2607	38 35 24	2602
	Regulus E.	46 4 48	2697	44 33 54	2678	43 3 14	2669	41 32 48	2661
	Spica E.	99 51 6	2627	98 19 21	2636	96 47 48	2646	95 16 27	2654
8	α Arietis W.	79 12 26	3026	80 42 6	3034	82 11 37	3040	83 41 0	3047
	Saturn W.	77 55 15	2894	79 25 35	2901	80 55 46	2909	82 25 48	2916
	Jupiter W.	66 23 4	2663	67 54 3	2670	69 24 53	2677	70 55 35	2683
	Aldebaran W.	46 5 4	2630	47 34 39	2636	49 4 7	2642	50 33 28	2647
	Regulus E.	34 4 22	2663	32 35 27	2677	31 6 49	2691	29 38 28	2705
	Spica E.	87 42 18	2695	86 11 59	2699	84 41 49	2699	83 11 47	2695
9	Saturn W.	89 53 57	3045	91 23 14	3051	92 52 24	3056	94 21 28	3060

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	III ^h .	P. L. of Diff.	VI ^h .	P. L. of Diff.	IX ^h .	P. L. of Diff.
9	Jupiter W.	72° 26' 9"	2990	73° 56' 34"	2997	75° 26' 51"	3003	76° 57' 0"	3009
	Aldebaran W.	52 2 42	3052	53 31 50	3057	55 0 52	3063	56 29 47	3067
	Spica E.	81 41 53	3022	80 12 8	3029	78 42 31	3035	77 13 2	3041
10	Jupiter W.	84 26 8	3033	85 55 41	3038	87 25 9	3039	88 54 33	3042
	Aldebaran W.	63 53 4	3087	65 21 30	3090	66 49 52	3093	68 18 10	3095
	Mars W.	31 22 10	3027	32 51 49	3024	34 21 32	3022	35 51 18	3019
	Pollux W.	23 36 39	3510	24 56 52	3467	26 17 53	3431	27 39 35	3400
	Spica E.	69 47 14	3065	68 18 21	3068	66 49 32	3072	65 20 48	3074
	Sun E.	126 10 32	3450	124 49 12	3454	123 27 56	3457	122 6 44	3461
11	Aldebaran W.	75 39 10	3101	77 7 19	3101	73 35 28	3101	80 3 37	3101
	Mars W.	43 20 52	3008	44 50 55	3005	46 21 2	3002	47 51 12	2999
	Pollux W.	34 35 31	3295	35 59 48	3281	37 24 22	3267	38 49 12	3255
	Spica E.	57 57 49	3082	56 29 18	3083	55 0 48	3082	53 32 17	3082
	Sun E.	115 21 29	3470	114 0 31	3470	112 39 33	3470	111 18 35	3469
12	Aldebaran W.	87 24 47	3069	88 53 10	3066	90 21 37	3062	91 50 9	3077
	Mars W.	55 23 5	2980	56 53 43	2975	58 24 27	2969	59 55 18	2964
	Pollux W.	45 56 42	3202	47 22 49	3193	48 49 7	3183	50 15 37	3173
	Spica E.	46 9 24	3072	44 40 40	3069	43 11 53	3066	41 43 2	3062
	Sun E.	104 33 21	3457	103 12 9	3454	101 50 53	3450	100 29 33	3446
13	Mars W.	67 31 28	2999	69 3 10	2991	70 35 2	2913	72 7 4	2905
	Pollux W.	57 30 59	3124	58 58 40	3114	60 26 33	3103	61 54 39	3092
	Regulus W.	20 33 23	3193	21 59 41	3185	23 26 32	3141	24 53 52	3119
	Spica E.	34 17 18	3034	32 47 47	3027	31 18 8	3020	29 48 20	3013
	Sun E.	93 41 18	3412	92 19 15	3405	90 57 4	3396	89 34 43	3387
14	Mars W.	79 50 15	2954	81 23 33	2942	82 57 6	2930	84 30 55	2918
	Pollux W.	69 18 35	3034	70 48 6	3029	72 17 52	3008	73 47 55	2995
	Regulus W.	32 16 40	3026	33 46 20	3009	35 16 21	2993	36 46 42	2977
	Sun E.	82 40 11	3333	81 16 38	3322	79 52 52	3310	78 28 52	3297
15	Pollux W.	81 22 23	2925	82 54 10	2910	84 26 16	2895	85 58 41	2880
	Regulus W.	44 23 31	2996	45 55 55	2980	47 28 40	2963	49 1 46	2947
	Sun E.	71 24 52	3225	69 59 13	3209	68 33 15	3193	67 6 58	3178
16	Pollux W.	93 45 45	2901	95 20 12	2785	96 55 0	2769	98 30 9	2752
	Regulus W.	56 52 45	2780	58 28 5	2743	60 3 48	2725	61 39 55	2707
	Sun E.	59 50 35	3091	58 22 15	3074	56 53 34	3056	55 24 31	3038
17	Pollux W.	106 31 22	2970	108 8 42	2954	109 46 24	2938	111 24 28	2922
	Regulus W.	69 46 27	2918	71 24 58	2899	73 3 54	2881	74 43 15	2863
	Sun E.	47 53 30	2944	46 22 7	2925	44 50 20	2906	43 18 9	2886
18	Regulus W.	83 6 13	2475	84 48 2	2457	86 30 16	2440	88 12 54	2423
	Spica W.	29 4 29	2462	30 46 36	2443	32 29 9	2426	34 12 7	2408
	Sun E.	35 31 17	2795	33 56 43	2777	32 21 45	2760	30 46 24	2743
22	Sun W.	17 54 12	2425	19 37 11	2419	21 20 18	2415	23 3 31	2412
	α Pegasi E.	63 49 59	2268	62 3 13	2272	60 16 33	2278	58 30 1	2285
	α Arietis E.	106 39 53	2131	104 49 41	2128	102 59 24	2126	101 9 4	2125

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXh.	P. L. of Diff.
9	Jupiter	W.	78° 27' 2"	3014	79° 56' 58"	3019	81° 26' 47"	3024	82° 56' 30"	3028
	Aldebaran	W.	57 58 37	3073	59 27 21	3076	60 56 0	3080	62 24 34	3083
	Spica	E.	75 43 40	3046	74 14 24	3052	72 45 15	3056	71 16 12	3060
10	Jupiter	W.	90 23 54	3044	91 53 12	3047	93 22 27	3048	94 51 40	3050
	Aldebaran	W.	69 46 26	3097	71 14 39	3099	72 42 50	3100	74 11 0	3100
	Mars	W.	37 21 7	3017	38 50 59	3014	40 20 54	3013	41 50 52	3010
	Pollux	W.	29 1 52	3372	30 24 40	3349	31 47 55	3389	33 11 33	3319
	Spica	E.	63 52 7	3077	62 23 29	3079	60 54 54	3081	59 26 21	3080
	SUN	E.	120 45 36	3463	119 24 31	3465	118 3 28	3468	116 42 28	3469
11	Aldebaran	W.	81 31 46	3089	82 59 57	3097	84 28 10	3094	85 56 27	3091
	Mars	W.	49 21 26	2986	50 51 44	2993	52 22 6	2989	53 52 33	2985
	Pollux	W.	40 14 16	3244	41 39 33	3233	43 5 3	3292	44 30 46	3211
	Spica	E.	52 3 46	3089	50 35 14	3080	49 6 40	3078	47 38 4	3075
	SUN	E.	109 57 36	3468	108 36 36	3466	107 15 34	3463	105 54 29	3461
12	Aldebaran	W.	93 18 47	3073	94 47 31	3066	96 16 22	3060	97 45 20	3056
	Mars	W.	61 26 16	2958	62 57 21	2952	64 28 34	2945	65 59 56	2937
	Pollux	W.	51 42 18	3163	53 9 11	3154	54 36 15	3144	56 3 31	3134
	Spica	E.	40 14 6	3057	38 45 4	3052	37 15 56	3047	35 46 41	3040
	SUN	E.	99 8 8	3440	97 46 37	3434	96 24 59	3427	95 3 13	3419
13	Mars	W.	73 39 17	2985	75 11 42	2985	76 44 20	2975	78 17 11	2965
	Pollux	W.	63 22 58	3081	64 51 31	3069	66 20 18	3058	67 49 19	3046
	Regulus	W.	26 21 38	3089	27 49 49	3079	29 18 24	3061	30 47 21	3043
	Spica	E.	28 18 23	3005	26 48 16	2996	25 17 58	2988	23 47 30	2980
	SUN	E.	88 12 12	3378	86 49 30	3367	85 26 36	3357	84 3 30	3345
14	Mars	W.	86 4 59	2986	87 39 19	2793	89 13 56	2780	90 48 50	2768
	Pollux	W.	75 18 14	2991	76 48 50	2968	78 19 43	2954	79 50 54	2939
	Regulus	W.	38 17 23	2992	39 48 24	2945	41 19 46	2929	42 51 28	2912
	SUN	E.	77 4 37	3263	75 40 6	3260	74 15 18	3255	72 50 14	3240
15	Pollux	W.	87 31 25	2985	89 4 29	2948	90 37 54	2933	92 11 39	2917
	Regulus	W.	50 35 13	2930	52 9 2	2912	53 43 14	2795	55 17 48	2778
	SUN	E.	65 40 22	3161	64 13 26	3144	62 46 10	3127	61 18 33	3110
16	Pollux	W.	100 5 40	2735	101 41 33	2719	103 17 48	2703	104 54 24	2687
	Regulus	W.	63 16 25	2989	64 53 19	2973	66 30 37	2953	68 8 20	2935
	SUN	E.	53 55 5	3019	52 25 16	3001	50 55 4	2989	49 24 29	2963
17	Pollux	W.	113 2 53	2906	114 41 40	2591	116 20 48	2576	118 0 16	2561
	Regulus	W.	76 23 1	2545	78 3 12	2527	79 43 48	2510	81 24 48	2492
	SUN	E.	41 45 35	2969	40 12 37	2950	38 39 14	2931	37 5 27	2914
18	Regulus	W.	89 55 56	2406	91 39 22	2390	93 23 11	2374	95 7 23	2358
	Spica	W.	35 55 30	2391	37 39 18	2374	39 23 30	2358	41 8 5	2342
	SUN	E.	29 10 41	2725	27 34 35	2709	25 58 7	2692	24 21 17	2678
22	SUN	W.	24 46 48	2411	26 30 7	2410	28 13 28	2410	29 56 49	2410
	α Pegasi	E.	56 43 39	2293	54 57 29	2302	53 11 33	2314	51 25 54	2326
	α Arietis	E.	99 18 43	2124	97 28 21	2124	95 37 59	2125	93 47 38	2126

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Sun	W. 31° 40' 9"	9419	33° 23' 27"	9414	35° 6' 42"	9417	36° 49' 52"	9421
	α Pegasi	E. 49 40 35	9343	47 55 38	9300	46 11 6	9361	44 27 4	9403
	α Arietis	E. 91 57 19	9126	90 7 3	9131	88 16 51	9135	86 26 45	9130
	Saturn	E. 92 38 36	9107	90 47 47	9109	88 57 2	9113	87 6 22	9116
	Jupiter	E. 103 31 10	9063	101 39 45	9066	99 48 25	9090	97 57 11	9094
24	Sun	W. 45 24 8	9448	47 6 35	9455	48 48 52	9469	50 30 58	9470
	α Arietis	E. 77 18 1	9167	75 28 43	9174	73 39 37	9189	71 50 43	9190
	Saturn	E. 77 54 49	9144	76 4 57	9151	74 15 16	9159	72 25 47	9167
	Jupiter	E. 88 42 43	9190	86 52 15	9198	85 1 58	9235	83 11 52	9243
25	Sun	W. 58 58 29	9516	60 39 20	9506	62 19 57	9537	64 0 19	9548
	α Aquilæ	W. 39 7 37	9463	40 28 43	9360	41 51 22	9300	43 15 23	9348
	α Arietis	E. 62 49 33	9239	61 2 4	9250	59 14 51	9269	57 27 56	9274
	Saturn	E. 63 21 35	9213	61 33 27	9294	59 45 35	9235	57 57 59	9246
	Jupiter	E. 74 4 29	9186	72 15 41	9196	70 27 8	9206	68 38 50	9216
	Aldebaran	E. 95 51 43	9216	94 3 40	9296	92 15 51	9236	90 28 17	9246
26	Sun	W. 72 18 16	9605	73 57 4	9618	75 35 35	9629	77 13 50	9642
	α Aquilæ	W. 50 30 37	9046	51 59 53	9091	53 29 40	9099	54 59 54	9081
	α Arietis	E. 48 37 55	9340	46 52 54	9355	45 8 15	9371	43 23 58	9367
	Saturn	E. 49 4 18	9307	47 18 28	9390	45 32 58	9334	43 47 48	9348
	Jupiter	E. 59 41 18	9272	57 54 37	9283	56 8 13	9296	54 22 7	9307
	Aldebaran	E. 81 34 17	9300	79 48 17	9311	78 2 34	9329	76 17 7	9335
27	Sun	W. 85 20 54	9704	86 57 29	9716	88 33 47	9730	90 9 47	9743
	α Aquilæ	W. 62 35 37	9098	64 7 20	9094	63 39 9	9090	67 11 2	9093
	Fomalhaut	W. 38 33 35	9045	39 47 51	9151	41 3 44	9070	42 21 3	9196
	Saturn	E. 35 7 12	9435	33 24 13	9443	31 41 39	9461	29 59 31	9480
	Jupiter	E. 45 35 57	9368	43 51 36	9381	42 7 34	9394	40 23 50	9406
	Aldebaran	E. 67 34 14	9394	65 50 31	9407	64 7 6	9419	62 23 59	9431
28	Sun	W. 98 5 40	9806	99 40 2	9818	101 14 7	9830	102 47 56	9842
	α Aquilæ	W. 74 50 23	9069	76 22 5	9033	77 53 42	9030	79 25 12	9045
	Fomalhaut	W. 49 4 8	9358	50 27 13	9395	51 50 55	9398	53 15 9	9374
	α Pegasi	W. 27 16 53	9168	28 43 40	9107	30 11 41	9057	31 40 43	9016
	Jupiter	E. 31 49 45	9472	30 7 52	9486	28 26 19	9501	26 45 7	9516
	Aldebaran	E. 53 52 49	9485	52 11 29	9507	50 30 26	9530	48 49 41	9534
29	Sun	W. 110 33 9	9901	112 5 26	9913	113 37 28	9924	115 9 16	9936
	Fomalhaut	W. 60 22 13	9186	61 48 27	9186	63 14 53	9178	64 41 28	9173
	α Pegasi	W. 39 16 0	9098	40 48 21	9087	42 20 57	9077	43 53 45	9069
	Aldebaran	E. 40 30 33	9601	38 51 39	9615	37 13 5	9631	35 34 52	9646
	Pollux	E. 82 41 13	9622	81 2 48	9634	79 24 39	9645	77 46 45	9657
30	Sun	W. 122 44 38	9999	124 15 1	9003	125 45 10	9014	127 15 6	9025
	Fomalhaut	W. 71 55 39	9169	73 22 34	9162	74 49 29	9163	76 16 23	9165
	α Pegasi	W. 51 39 26	9055	53 12 42	9056	54 45 57	9057	56 19 11	9050
	Pollux	E. 69 41 5	9713	68 4 43	9725	66 28 36	9736	64 52 44	9746
31	Fomalhaut	W. 83 29 49	9188	84 56 12	9194	86 22 28	9201	87 48 36	9209
	α Pegasi	W. 64 4 30	9076	65 37 19	9081	67 10 2	9086	68 42 39	9091
	Pollux	E. 56 57 21	9809	55 23 5	9821	53 49 5	9835	52 15 22	9848

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	Sun W.	38 32 57	9435	40 15 56	9430	41 58 48	9436	43 41 32	9441
	α Pegasi E.	42 43 34	9439	41 0 41	9459	39 18 30	9493	37 37 7	9531
	α Arietis E.	84 36 45	9143	82 46 52	9148	80 57 6	9154	79 7 29	9160
	Saturn E.	85 15 48	9191	83 25 21	9196	81 35 2	9139	79 44 51	9137
	Jupiter E.	96 6 3	9098	94 15 1	9103	92 24 6	9109	90 33 20	9115
24	Sun W.	52 12 53	9479	53 54 36	9487	55 36 7	9497	57 17 25	9507
	α Arietis E.	70 2 1	9199	68 13 32	9208	66 25 17	9218	64 37 17	9229
	Saturn E.	70 36 30	9176	68 47 26	9184	66 58 35	9194	65 9 58	9203
	Jupiter E.	81 21 58	9151	79 32 16	9159	77 42 47	9168	75 53 31	9177
25	Sun W.	65 40 25	9559	67 20 16	9570	68 59 52	9582	70 39 12	9593
	α Aquilæ W.	44 40 35	9195	46 6 50	9150	47 33 59	9110	49 1 57	9075
	α Arietis E.	55 41 18	9298	53 54 58	9299	52 8 57	9313	50 23 16	9326
	Saturn E.	56 10 40	9258	54 23 38	9270	52 36 54	9261	50 50 27	9294
	Jupiter E.	66 50 47	9297	65 3 0	9239	63 15 30	9249	61 28 16	9260
	Aldebaran E.	88 40 58	9257	86 53 55	9267	85 7 7	9277	83 20 34	9288
26	Sun W.	78 51 48	9654	80 29 30	9666	82 6 55	9679	83 44 3	9692
	α Aquilæ W.	56 30 31	9265	58 1 27	9254	59 32 38	9243	61 4 2	9235
	α Arietis E.	41 40 5	9404	39 56 36	9422	38 13 32	9440	36 30 54	9458
	Saturn E.	42 2 58	9393	40 18 29	9377	38 34 21	9389	36 50 35	9408
	Jupiter E.	52 36 18	9319	50 50 46	9331	49 5 32	9344	47 20 36	9355
	Aldebaran E.	74 31 58	9246	72 47 6	9258	71 2 31	9271	69 18 14	9282
27	Sun W.	91 45 30	9755	93 20 57	9767	94 56 8	9780	96 31 2	9792
	α Aquilæ W.	68 42 56	9219	70 14 51	9220	71 46 45	9222	73 18 36	9225
	Fomalhaut W.	43 39 39	9236	44 59 23	9488	46 20 7	9435	47 41 44	9393
	Saturn E.	26 17 50	9208	26 36 39	9225	24 56 1	9251	23 15 59	9279
	Jupiter E.	38 40 24	9419	36 57 16	9439	35 14 27	9445	33 31 57	9458
	Aldebaran E.	60 41 9	9444	58 58 37	9457	57 16 23	9470	55 34 27	9482
28	Sun W.	104 21 30	9854	105 54 48	9866	107 27 50	9878	109 0 37	9890
	α Aquilæ W.	80 56 34	9261	82 27 48	9259	83 58 52	9268	85 29 45	9277
	Fomalhaut W.	54 39 51	9253	56 4 58	9235	57 30 26	9220	58 56 12	9207
	α Pegasi W.	33 10 36	9298	34 41 11	9255	36 12 20	9232	37 43 58	9213
	Jupiter E.	25 4 16	9231	23 23 46	9247	21 43 38	9264	20 3 54	9285
	Aldebaran E.	47 9 15	9247	45 29 7	9260	43 49 17	9274	42 9 46	9287
29	Sun W.	116 40 49	9947	118 12 8	9959	119 43 12	9970	121 14 2	9981
	Fomalhaut W.	66 8 10	9168	67 34 58	9164	69 1 50	9163	70 28 44	9162
	α Pegasi W.	45 26 43	9264	46 59 48	9260	48 32 58	9258	50 6 11	9256
	Aldebaran E.	33 56 59	9261	32 19 27	9278	30 42 17	9294	29 5 31	9316
	Pollux E.	76 9 7	9268	74 31 44	9279	72 54 36	9290	71 17 43	9301
30	Sun W.	128 44 48	3035	130 14 17	3046	131 43 33	3056	133 12 37	3066
	Fomalhaut W.	77 43 14	9168	79 10 1	9173	80 36 43	9178	82 3 19	9183
	α Pegasi W.	57 52 23	9262	59 25 31	9265	60 58 35	9268	62 31 35	9272
	Pollux E.	63 17 8	9260	61 41 48	9272	60 6 43	9284	58 31 54	9296
31	Fomalhaut W.	89 14 34	9218	90 40 22	9226	92 6 0	9235	93 31 28	9244
	α Pegasi W.	70 15 10	9266	71 47 34	9269	73 19 50	9269	74 51 58	9274
	Pollux E.	50 41 57	9262	49 8 50	9276	47 36 1	9291	46 3 31	9296

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.							
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.		
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.			
	^h ^m ^s	^s	[°] ['] ["]	["]	^h ^m		^h ^m ^s	^s	[°] ['] ["]	["]	^h ^m		
1	21 42 1.11	+11.562	15 40 6.7	+63.01	2 56.9	1	23 54 0.33	+9.855	0 37 52.2	+77.47	3 6.7		
2	21 46 37.82	11.497	15 14 43.2	63.97	2 57.7	2	23 57 56.34	9.812	0 6 53.5	77.44	3 6.7		
3	21 51 12.97	11.432	14 48 57.1	64.90	2 58.4	3	0 1 51.32	9.769	0 24 4.0	77.38	3 6.6		
4	21 55 46.56	11.367	14 22 49.3	65.79	2 59.0	4	0 5 45.27	9.726	0 54 59.7	77.29	3 6.6		
5	22 0 18.61	11.303	13 56 20.6	66.63	2 59.6	5	0 9 38.19	9.683	1 25 52.9	77.17	3 6.5		
6	22 4 49.11	11.239	13 29 31.9	67.45	3 0.1	6	0 13 30.08	9.641	1 56 42.7	77.09	3 6.4		
7	22 9 18.09	11.175	13 2 24.0	68.24	3 0.6	7	0 17 20.95	9.598	2 27 28.6	76.84	3 6.3		
8	22 13 45.55	11.112	12 34 57.7	68.99	3 1.1	8	0 21 10.79	9.555	2 58 9.8	76.63	3 6.2		
9	22 18 11.50	11.050	12 7 13.8	69.70	3 1.6	9	0 24 59.61	9.512	3 28 45.7	76.39	3 6.1		
10	22 22 35.96	10.989	11 39 13.2	70.39	3 2.0	10	0 28 47.39	9.469	3 59 15.5	76.12	3 6.0		
11	22 26 58.95	10.926	11 10 56.6	71.04	3 2.5	11	0 32 34.13	9.426	4 29 38.5	75.82	3 5.8		
12	22 31 20.50	10.868	10 42 24.8	71.85	3 2.9	12	0 36 19.84	9.383	4 59 54.0	75.49	3 5.6		
13	22 35 40.62	10.806	10 13 38.5	72.24	3 3.3	13	0 40 4.51	9.339	5 30 1.4	75.14	3 5.4		
14	22 39 59.32	10.749	9 44 38.5	72.80	3 3.7	14	0 43 48.13	9.295	5 59 59.9	74.77	3 5.2		
15	22 44 16.61	10.692	9 15 25.7	73.32	3 4.0	15	0 47 30.69	9.250	6 29 49.1	74.36	3 5.0		
16	22 48 32.57	10.636	8 46 0.7	73.80	3 4.3	16	0 51 12.17	9.205	6 59 28.2	73.93	3 4.8		
17	22 52 47.17	10.580	8 16 24.3	74.26	3 4.6	17	0 54 52.57	9.160	7 28 56.8	73.47	3 4.5		
18	22 57 0.45	10.525	7 46 37.3	74.69	3 4.9	18	0 58 31.86	9.114	7 58 14.0	72.99	3 4.2		
19	23 1 12.42	10.471	7 16 40.4	75.08	3 5.2	19	1 2 10.03	9.067	8 27 19.3	72.48	3 3.9		
20	23 5 23.12	10.419	6 46 34.3	75.45	3 5.5	20	1 5 47.06	9.019	8 56 12.0	71.94	3 3.6		
21	23 9 32.58	10.368	6 16 19.8	75.78	3 5.7	21	1 9 22.92	8.971	9 24 51.5	71.38	3 3.2		
22	23 13 40.82	10.318	5 45 57.6	76.09	3 5.9	22	1 12 57.60	8.920	9 53 17.1	70.79	3 2.8		
23	23 17 47.86	10.268	5 15 28.4	76.37	3 6.1	23	1 16 31.06	8.869	10 21 28.3	70.17	3 2.4		
24	23 21 53.71	10.219	4 44 53.0	76.61	3 6.2	24	1 20 3.25	8.816	10 49 24.4	69.52	3 2.0		
25	23 25 58.41	10.171	4 14 12.0	76.83	3 6.3	25	1 23 34.13	8.761	11 17 4.6	68.85	3 1.5		
26	23 30 1.97	10.124	3 43 26.1	77.02	3 6.4	26	1 27 3.66	8.704	11 44 28.5	68.16	3 1.1		
27	23 34 4.41	10.078	3 12 36.2	77.18	3 6.5	27	1 30 31.80	8.644	12 11 35.3	67.43	3 0.6		
28	23 38 5.74	10.033	2 41 43.1	77.30	3 6.6	28	1 33 58.49	8.589	12 38 24.4	66.68	3 0.1		
29	23 42 5.98	9.988	2 10 47.4	77.39	3 6.7	29	1 37 23.64	8.517	13 4 55.1	65.90	2 59.6		
30	23 46 5.15	9.944	1 39 49.9	77.44	3 6.7	30	1 40 47.19	8.447	13 31 6.8	65.10	2 59.1		
31	23 50 3.27	9.899	1 8 51.2	77.47	3 6.7	31	1 44 9.06	8.376	13 56 58.7	64.26	2 58.5		
32	23 54 0.33	+9.855	0 37 52.2	+77.47	3 6.7	32	1 47 29.18	+8.302	+14 22 30.2	+63.40	2 57.9		
Day of the Month. 1st. 6th. 11th. 16th. 21st. 26th. 31st.						Day of the Month. 5th. 10th. 15th. 20th. 25th.							
Semidiameter		8.1	8.3	8.6	8.9	9.2	Semidiameter		10.5	11.0	11.5	12.1	12.8
Hor. Parallax		8.4	8.6	8.9	9.2	9.6	Hor. Parallax		10.9	11.4	11.9	12.5	13.3

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

MARCH.

APRIL.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
1	h m s	s	° ' "	"	h m	1	h m s	s	° ' "	"	h m
1	1 37 23.64	+8.517	+13 4 55.1	+65.90	2 59.6	1	3 0 9.75	+3.675	+23 12 46.6	+96.95	2 20.0
2	1 40 47.19	8.447	13 31 6.8	65.10	2 59.1	2	3 1 34.37	3.374	23 23 10.7	96.06	2 17.5
3	1 44 9.06	8.376	13 56 58.7	64.98	2 58.5	3	3 2 51.64	3.062	23 32 48.7	95.09	2 14.8
4	1 47 29.18	8.302	14 22 30.2	63.40	2 57.9	4	3 4 1.28	2.739	23 41 38.6	91.06	2 12.0
5	1 50 47.46	8.223	14 47 40.7	62.51	2 57.2	5	3 5 3.00	2.403	23 49 38.8	18.97	2 9.1
6	1 54 3.81	8.140	15 12 29.4	61.59	2 56.5	6	3 5 56.52	2.057	23 56 47.7	16.79	2 6.1
7	1 57 18.12	8.053	15 36 55.8	60.64	2 55.8	7	3 6 41.58	1.701	24 3 3.4	14.52	2 2.9
8	2 0 30.27	7.961	16 0 59.3	59.67	2 55.1	8	3 7 17.89	1.330	24 8 23.9	12.18	1 59.5
9	2 3 40.16	7.865	16 24 39.0	58.67	2 54.3	9	3 7 45.23	0.952	24 12 47.1	9.75	1 56.0
10	2 6 47.67	7.763	16 47 54.4	57.64	2 53.5	10	3 8 3.40	0.564	24 16 11.2	7.24	1 52.3
11	2 9 52.68	7.655	17 10 44.9	56.58	2 52.6	11	3 8 12.21	+0.171	24 18 33.9	4.64	1 48.5
12	2 12 55.06	7.542	17 33 9.6	55.50	2 51.7	12	3 8 11.50	-0.227	24 19 53.0	+1.94	1 44.5
13	2 15 54.67	7.424	17 55 7.9	54.39	2 50.7	13	3 8 1.18	0.630	24 20 6.3	-0.84	1 40.4
14	2 18 51.36	7.300	18 16 39.2	53.25	2 49.7	14	3 7 41.17	1.035	24 19 11.8	3.71	1 36.2
15	2 21 44.98	7.170	18 37 42.8	52.08	2 48.6	15	3 7 11.44	1.439	24 17 7.3	6.66	1 31.8
16	2 24 35.39	7.033	18 58 18.1	50.87	2 47.5	16	3 6 32.03	1.841	24 13 50.8	9.71	1 27.2
17	2 27 22.43	6.888	19 18 24.3	49.65	2 46.3	17	3 5 43.03	2.228	24 9 20.5	12.83	1 22.4
18	2 30 5.93	6.737	19 38 0.8	48.39	2 45.1	18	3 4 44.59	2.626	24 3 34.7	16.00	1 17.4
19	2 32 45.71	6.578	19 57 6.8	47.11	2 43.8	19	3 3 36.91	3.007	23 56 32.0	19.22	1 12.3
20	2 35 21.58	6.412	20 15 41.5	45.80	2 42.5	20	3 2 20.28	3.374	23 48 11.5	22.47	1 7.1
21	2 37 53.37	6.237	20 33 44.2	44.44	2 41.1	21	3 0 55.05	3.724	23 38 32.4	25.77	1 1.8
22	2 40 20.88	6.054	20 51 14.1	43.05	2 39.6	22	2 59 21.66	4.053	23 27 34.1	29.07	0 56.3
23	2 42 13.89	5.863	21 8 10.5	41.63	2 38.0	23	2 57 40.59	4.369	23 15 17.0	32.34	0 50.7
24	2 45 2.18	5.660	21 24 32.4	40.18	2 36.3	24	2 55 52.42	4.646	23 1 41.8	35.58	0 45.0
25	2 47 15.52	5.450	21 40 19.0	38.69	2 34.6	25	2 53 57.79	4.902	22 46 49.7	38.73	0 39.1
26	2 49 23.60	5.226	21 55 29.2	37.16	2 32.8	26	2 51 57.38	5.127	22 30 43.0	41.79	0 33.2
27	2 51 26.45	5.000	22 10 2.0	35.59	2 30.9	27	2 49 51.96	5.319	22 13 24.2	44.72	0 27.2
28	2 53 23.54	4.757	22 23 56.5	33.97	2 28.9	28	2 47 42.35	5.476	21 54 56.7	47.50	0 21.2
29	2 55 14.69	4.503	22 37 11.5	32.30	2 26.8	29	2 45 29.42	5.566	21 35 24.8	50.09	0 15.1
30	2 56 59.63	4.240	22 49 45.7	30.56	2 24.6	30	2 43 14.06	5.679	21 14 53.5	52.46	0 8.9
31	2 58 38.08	3.963	23 1 37.8	28.78	2 22.3	31	2 40 57.23	5.723	20 53 28.2	54.59	0 2.7
32	3 0 9.75	+3.675	+23 12 46.6	+96.95	2 20.0	32	2 38 39.78	-5.727	+20 31 15.1	-56.44	23 50.3

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter	13.6	14.4	15.4	16.5	17.8	19.2	Semidiameter	20.8	22.5	24.3	26.1	27.8	29.1
Hor. Parallax	14.1	15.0	16.0	17.1	18.4	19.9	Hor. Parallax	21.5	23.2	25.1	27.0	28.8	30.1

+ prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.								
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.			
Noon.	Noon.	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	Noon.					
h m s	s	° ' "	"	h m s		h m s	s	° ' "	"	h m				
1	2 40 57.23	-5.793	+20 53 28.2	-54.59	23 56.5	1	2 16 38.19	+3.147	+12 7 28.1	-6.69	21 33.8			
2	2 38 39.78	5.797	20 31 15.1	56.44	23 50.3	2	2 17 57.10	3.498	12 5 16.1	4.33	21 31.3			
3	2 36 22.70	5.692	20 8 20.9	58.00	23 44.1	3	2 19 22.63	3.700	12 3 59.7	-2.04	21 28.9			
4	2 34 6.94	5.618	19 44 53.0	59.96	23 38.0	4	2 20 54.58	3.963	12 3 37.0	+0.15	21 26.6			
5	2 31 53.41	5.507	19 20 59.0	60.19	23 31.9	5	2 22 32.74	4.217	12 4 5.9	2.25	21 24.3			
6	2 29 42.99	5.359	18 56 47.0	60.77	23 25.8	6	2 24 16.91	4.463	12 5 24.4	4.26	21 22.2			
7	2 27 36.52	5.177	18 32 25.1	61.01	23 19.9	7	2 26 6.89	4.708	12 7 30.6	6.23	21 20.2			
8	2 25 34.81	4.963	18 8 1.6	60.91	23 14.1	8	2 28 2.50	4.933	12 10 22.3	8.08	21 18.3			
9	2 23 38.61	4.718	17 43 44.5	60.48	23 8.3	9	2 30 3.56	5.156	12 13 57.6	9.85	21 16.5			
10	2 21 48.61	4.447	17 19 41.7	59.73	23 2.6	10	2 32 9.89	5.372	12 18 14.5	11.84	21 14.7			
11	2 20 5.40	4.153	16 56 0.6	58.68	22 57.1	11	2 34 21.33	5.581	12 23 10.9	13.15	21 13.0			
12	2 18 29.49	3.838	16 32 48.3	57.34	22 51.7	12	2 36 37.71	5.788	12 28 44.7	14.67	21 11.4			
13	2 17 1.39	3.504	16 10 11.4	55.73	22 46.5	13	2 38 58.87	5.979	12 34 54.1	16.10	21 9.9			
14	2 15 41.50	3.153	15 48 16.1	53.88	22 41.3	14	2 41 24.66	6.169	12 41 37.1	17.46	21 8.5			
15	2 14 30.18	2.793	15 27 7.9	51.81	22 36.3	15	2 43 54.94	6.353	12 48 51.6	18.74	21 7.1			
16	2 13 27.61	2.494	15 6 51.7	49.56	22 31.5	16	2 46 29.57	6.531	12 56 35.7	19.93	21 5.8			
17	2 12 33.96	2.049	14 47 31.4	47.14	22 26.8	17	2 49 8.41	6.704	13 4 47.8	21.05	21 4.5			
18	2 11 49.37	1.670	14 29 10.7	44.59	22 22.2	18	2 51 51.32	6.871	13 13 25.8	22.09	21 3.3			
19	2 11 13.90	1.288	14 11 52.2	41.95	22 17.8	19	2 54 38.16	7.032	13 22 28.0	23.67	21 2.2			
20	2 10 47.55	0.909	13 55 38.2	39.23	22 13.6	20	2 57 28.82	7.190	13 31 52.7	25.97	21 1.2			
21	2 10 30.28	0.532	13 40 30.3	36.44	22 9.6	21	3 0 23.19	7.348	13 41 37.9	24.79	21 0.2			
22	2 10 22.02	-0.158	13 26 29.9	33.61	22 5.7	22	3 3 21.15	7.490	13 51 42.0	25.55	20 59.3			
23	2 10 22.65	+0.209	13 13 37.5	30.77	22 1.9	23	3 6 22.60	7.632	14 2 3.5	26.24	20 58.4			
24	2 10 32.01	0.570	13 1 53.3	27.93	21 58.3	24	3 9 27.42	7.770	14 12 40.8	26.87	20 57.6			
25	2 10 49.94	0.983	12 51 17.0	25.11	21 54.8	25	3 12 35.51	7.906	14 23 32.4	27.43	20 56.8			
26	2 11 16.25	1.268	12 41 48.1	22.31	21 51.3	26	3 15 46.80	8.037	14 34 36.6	27.92	20 56.1			
27	2 11 50.74	1.605	12 33 25.8	19.56	21 48.1	27	3 19 1.20	8.164	14 45 52.0	28.36	20 55.4			
28	2 12 33.19	1.933	12 26 9.0	16.85	21 45.0	28	3 22 18.61	8.288	14 57 17.2	28.73	20 54.8			
29	2 13 23.39	2.251	12 19 56.4	14.21	21 42.1	29	3 25 38.96	8.403	15 8 50.6	29.05	20 54.2			
30	2 14 21.11	2.559	12 14 46.5	11.63	21 39.2	30	3 29 2.19	8.528	15 20 31.0	29.31	20 53.7			
31	2 15 26.12	2.858	12 10 37.7	9.13	21 36.4	31	3 32 28.23	8.644	15 32 17.0	29.51	20 53.3			
32	2 16 38.19	+3.147	+12 7 28.1	-6.69	21 33.8	32	3 35 57.02	+8.757	+15 44 7.3	+29.67	20 52.9			
Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter	29.7	29.7	29.8	29.4	29.6	29.7	29.9	Semidiameter	20.2	19.6	17.3	16.0	14.9	14.0
Hor. Parallax	30.8	30.7	29.8	28.4	26.5	24.6	22.7	Hor. Parallax	20.9	19.3	17.9	16.6	15.5	14.5

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

JULY.

AUGUST.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	^h ^m ^s	^s	[°] ['] ["]	["]	^h ^m		^h ^m ^s	^s	[°] ['] ["]	["]	^h ^m
1	3 32 28.23	+8.644	+15 32 17.0	+29.51	20 53.3	1	5 37 48.55	+11.385	+20 40 55.5	+13.89	20 57.5
2	3 35 57.02	8.757	15 44 7.3	29.67	20 52.9	2	5 42 20.04	11.341	20 46 15.9	12.83	20 58.1
3	3 39 28.49	8.868	15 56 0.7	29.78	20 52.5	3	5 46 52.86	11.306	20 51 10.5	11.74	20 58.7
4	3 43 2.59	8.977	16 7 56.0	29.83	20 52.1	4	5 51 26.96	11.448	20 55 38.5	10.63	20 59.3
5	3 46 39.26	9.084	16 19 51.9	29.83	20 51.8	5	5 56 2.30	11.499	20 59 39.7	9.49	21 0.0
6	3 50 18.47	9.186	16 31 47.2	29.78	20 51.6	6	6 0 38.85	11.548	21 3 13.3	8.33	21 0.6
7	3 54 0.16	9.293	16 43 40.9	29.68	20 51.4	7	6 5 16.55	11.595	21 6 18.8	7.15	21 1.3
8	3 57 44.30	9.398	16 55 31.7	29.54	20 51.2	8	6 9 55.36	11.641	21 8 55.6	5.94	21 2.0
9	4 1 30.85	9.499	17 7 18.4	29.35	20 51.1	9	6 14 35.23	11.685	21 11 3.2	4.72	21 2.7
10	4 5 19.76	9.587	17 18 59.9	29.11	20 51.0	10	6 19 16.12	11.727	21 12 41.3	3.47	21 3.4
11	4 9 10.99	9.683	17 30 35.2	28.83	20 51.0	11	6 23 58.00	11.766	21 13 49.4	2.21	21 4.1
12	4 13 4.50	9.777	17 42 3.1	28.50	20 51.0	12	6 28 40.81	11.803	21 14 27.0	+0.93	21 4.9
13	4 17 0.26	9.870	17 53 22.7	28.12	20 51.1	13	6 33 24.50	11.839	21 14 33.8	-0.26	21 5.7
14	4 20 58.22	9.961	18 4 32.8	27.71	20 51.1	14	6 38 9.01	11.879	21 14 9.4	1.66	21 6.5
15	4 24 58.33	10.050	18 15 32.4	27.26	20 51.2	15	6 42 54.29	11.904	21 13 13.6	2.98	21 7.4
16	4 29 0.56	10.137	18 26 20.7	26.76	20 51.3	16	6 47 40.29	11.932	21 11 45.9	4.31	21 8.2
17	4 33 4.87	10.223	18 36 56.5	26.22	20 51.5	17	6 52 26.96	11.959	21 9 46.2	5.65	21 9.1
18	4 37 11.21	10.307	18 47 18.8	25.64	20 51.7	18	6 57 14.24	11.983	21 7 14.3	7.00	21 10.0
19	4 41 19.55	10.388	18 57 26.8	25.02	20 51.9	19	7 2 2.08	12.005	21 4 9.9	8.26	21 10.9
20	4 45 29.84	10.468	19 7 19.6	24.37	20 52.1	20	7 6 50.43	12.026	21 0 32.8	9.79	21 11.8
21	4 49 42.02	10.548	19 16 56.1	23.68	20 52.4	21	7 11 39.23	12.043	20 56 22.8	11.09	21 12.0
22	4 53 56.05	10.625	19 26 15.6	22.95	20 52.7	22	7 16 28.42	12.059	20 51 39.8	12.47	21 13.5
23	4 58 11.90	10.699	19 35 17.1	22.18	20 53.0	23	7 21 17.95	12.072	20 46 23.7	13.85	21 14.4
24	5 2 29.52	10.771	19 43 59.9	21.38	20 53.4	24	7 26 7.77	12.082	20 40 34.6	15.23	21 15.3
25	5 6 48.85	10.841	19 52 23.2	20.55	20 53.8	25	7 30 57.84	12.091	20 34 12.4	16.61	21 16.2
26	5 11 9.85	10.910	20 0 26.2	19.69	20 54.3	26	7 35 48.09	12.098	20 27 17.1	17.99	21 17.1
27	5 15 32.49	10.977	20 8 8.0	18.80	20 54.8	27	7 40 38.49	12.103	20 19 48.7	19.37	21 18.0
28	5 19 56.71	11.042	20 15 28.0	17.88	20 55.3	28	7 45 28.99	12.107	20 11 47.1	20.75	21 18.9
29	5 24 22.46	11.105	20 22 25.5	16.92	20 55.8	29	7 50 19.54	12.108	20 3 12.5	22.12	21 19.8
30	5 28 49.72	11.167	20 28 59.7	15.94	20 56.4	30	7 55 10.09	12.107	19 54 4.9	23.50	21 20.7
31	5 33 18.43	11.227	20 35 9.9	14.93	20 56.9	31	8 0 0.61	12.105	19 44 24.5	24.87	21 21.6
32	5 37 48.55	+11.285	+20 40 55.5	+13.89	20 57.5	32	8 4 51.06	+12.101	+19 34 11.4	+26.23	21 22.5

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.	Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter	13.1	12.4	11.7	11.1	10.5	10.1	Semidiameter	9.6	9.2	8.9	8.5	8.2	8.0
Hor. Parallax	13.6	12.8	12.1	11.5	10.9	10.4	Hor. Parallax	10.0	9.6	9.2	8.8	8.5	8.2

+ prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>	<i>h m</i>		<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>	<i>h m</i>
1	8 4 51.06	+12.101	+19 34 11.4	-26.33	21 22.5	1	10 27 22.86	+11.571	+10 38 53.9	-60.16	21 46.7
2	8 9 41.40	12.086	19 23 25.7	27.59	21 23.4	2	10 32 0.33	11.551	10 14 40.7	60.95	21 47.3
3	8 14 31.59	12.068	19 12 7.6	28.94	21 24.3	3	10 36 37.33	11.532	9 50 8.8	61.72	21 48.0
4	8 19 21.60	12.060	19 0 17.3	30.28	21 25.2	4	10 41 13.88	11.514	9 25 18.9	62.47	21 48.6
5	8 24 11.41	12.071	18 47 54.9	31.60	21 26.1	5	10 45 49.98	11.496	9 0 11.5	63.19	21 49.3
6	8 29 0.97	12.061	18 35 0.8	32.99	21 27.0	6	10 50 25.67	11.479	8 34 47.1	63.88	21 49.9
7	8 33 50.27	12.049	18 21 35.1	34.23	21 27.9	7	10 55 0.96	11.463	8 9 6.5	64.54	21 50.6
8	8 38 39.28	12.036	18 7 38.1	35.53	21 28.7	8	10 59 35.88	11.448	7 43 10.3	65.17	21 51.2
9	8 43 27.97	12.022	17 53 10.3	36.81	21 29.6	9	11 4 10.45	11.434	7 16 59.2	65.78	21 51.8
10	8 48 16.31	12.007	17 38 12.0	38.07	21 30.4	10	11 8 44.71	11.421	6 50 33.9	66.36	21 52.4
11	8 53 4.28	11.992	17 22 43.5	39.33	21 31.3	11	11 13 18.66	11.408	6 23 55.0	66.92	21 53.1
12	8 57 51.86	11.975	17 6 44.9	40.57	21 32.1	12	11 17 52.33	11.397	5 57 3.2	67.44	21 53.7
13	9 2 39.03	11.957	16 50 16.7	41.80	21 33.0	13	11 22 25.76	11.387	5 29 59.1	67.93	21 54.3
14	9 7 25.76	11.938	16 33 19.4	43.00	21 33.8	14	11 26 58.96	11.379	5 2 43.4	68.40	21 54.9
15	9 12 12.04	11.919	16 15 53.5	44.18	21 34.6	15	11 31 31.97	11.371	4 35 16.8	68.84	21 55.5
16	9 16 57.85	11.900	15 57 59.4	45.34	21 35.4	16	11 36 4.81	11.365	4 7 40.0	69.25	21 56.1
17	9 21 43.19	11.880	15 39 37.5	46.49	21 36.2	17	11 40 37.52	11.360	3 39 53.9	69.63	21 56.7
18	9 26 28.06	11.859	15 20 48.3	47.62	21 37.0	18	11 45 10.12	11.355	3 11 59.0	69.98	21 57.3
19	9 31 12.42	11.838	15 1 22.4	48.73	21 37.8	19	11 49 42.64	11.352	2 43 56.1	70.29	21 57.9
20	9 35 56.24	11.816	14 41 50.4	49.80	21 38.6	20	11 54 15.10	11.351	2 15 46.1	70.58	21 58.5
21	9 40 39.55	11.794	14 21 42.7	50.86	21 39.4	21	11 58 47.54	11.351	1 47 29.4	70.84	21 59.1
22	9 45 22.31	11.771	14 1 9.7	51.90	21 40.2	22	12 3 19.98	11.352	1 19 6.8	71.07	21 59.7
23	9 50 4.52	11.748	13 40 12.1	52.92	21 41.0	23	12 7 52.46	11.354	0 50 39.1	71.27	22 0.3
24	9 54 46.19	11.725	13 18 50.4	53.91	21 41.7	24	12 12 25.01	11.357	+ 0 22 6.9	71.44	22 0.9
25	9 59 27.32	11.702	12 57 5.3	54.88	21 42.5	25	12 16 57.66	11.362	- 0 6 29.0	71.58	22 1.5
26	10 4 7.90	11.680	12 34 57.2	55.82	21 43.3	26	12 21 30.45	11.368	0 35 7.7	71.68	22 2.1
27	10 8 47.94	11.657	12 12 26.8	56.74	21 43.9	27	12 26 3.40	11.376	1 3 48.4	71.75	22 2.7
28	10 13 27.45	11.635	11 49 34.7	57.64	21 44.6	28	12 30 36.54	11.385	1 32 30.6	71.79	22 3.3
29	10 18 6.44	11.613	11 26 21.5	58.51	21 45.3	29	12 35 9.92	11.395	2 1 13.6	71.81	22 3.9
30	10 22 44.91	11.592	11 2 47.7	59.35	21 46.0	30	12 39 43.58	11.407	2 29 56.7	71.80	22 4.6
31	10 27 22.86	11.571	10 38 53.9	60.16	21 46.7	31	12 44 17.55	11.421	2 58 39.0	71.76	22 5.2
32	10 32 0.33	+11.551	+10 14 40.7	-60.95	21 47.3	32	12 48 51.86	+11.436	- 3 27 19.9	-71.68	22 5.8
Day of the Month.						Day of the Month.					
3d.		8th.	13th.	18th.	23d.	3d.		8th.	13th.	18th.	23d.
Semidiameter		7.7	7.5	7.3	7.1	Semidiameter		6.6	6.4	6.3	6.2
Hor. Parallax		8.0	7.7	7.5	7.3	Hor. Parallax		6.8	6.7	6.5	6.4

NOTE.—North declinations are marked +, south declinations —

GREENWICH MEAN TIME.

NOVEMBER.							DECEMBER.						
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.		Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	
	Noon.	Noon.	Noon.	Noon.	h	m		Noon.	Noon.	Noon.	Noon.	h	m
1	12 48 51.86	+11.436	3 27 19.9	-71.68	22	5.8	1	15 11 32.66	+12.511	-16 33 4.0	-54.35	22	30.7
2	12 53 26.55	11.453	3 55 58.6	71.57	22	6.4	2	15 16 33.52	12.560	16 54 35.0	53.96	22	31.8
3	12 58 1.67	11.471	4 24 34.3	71.43	22	7.1	3	15 21 35.56	12.609	17 15 39.4	52.14	22	32.9
4	13 2 37.25	11.491	4 53 6.4	71.27	22	7.7	4	15 26 38.79	12.659	17 36 16.5	50.98	22	34.0
5	13 7 13.32	11.513	5 21 34.0	71.07	22	8.4	5	15 31 43.21	12.709	17 56 25.4	49.79	22	35.2
6	13 11 49.93	11.536	5 49 56.4	70.83	22	9.1	6	15 36 48.83	12.759	18 16 5.4	48.57	22	36.3
7	13 16 27.10	11.560	6 18 12.9	70.57	22	9.8	7	15 41 55.65	12.809	18 35 15.8	47.32	22	37.4
8	13 21 4.89	11.587	6 46 22.7	70.28	22	10.5	8	15 47 3.67	12.859	18 53 55.9	46.04	22	38.6
9	13 25 43.33	11.615	7 14 25.1	69.95	22	11.2	9	15 52 12.88	12.909	19 12 4.9	44.73	22	39.8
10	13 30 22.45	11.644	7 42 19.3	69.59	22	11.9	10	15 57 23.26	12.958	19 29 42.1	43.39	22	41.0
11	13 35 2.27	11.674	8 10 4.5	69.20	22	12.6	11	16 2 34.81	13.006	19 46 46.7	42.02	22	42.3
12	13 39 42.85	11.706	8 37 39.9	68.78	22	13.3	12	16 7 47.51	13.053	20 3 18.0	40.61	22	43.6
13	13 44 24.21	11.739	9 5 4.6	68.32	22	14.1	13	16 13 1.33	13.100	20 19 15.3	39.18	22	44.9
14	13 49 6.39	11.774	9 32 17.9	67.82	22	14.9	14	16 18 16.27	13.146	20 34 37.9	37.72	22	46.2
15	13 53 49.41	11.810	9 59 19.0	67.29	22	15.7	15	16 23 32.30	13.191	20 49 25.3	36.24	22	47.6
16	13 58 33.30	11.847	10 26 7.2	66.74	22	16.5	16	16 28 49.39	13.234	21 3 36.8	34.73	22	49.0
17	14 3 18.09	11.886	10 52 41.7	66.15	22	17.3	17	16 34 7.52	13.276	21 17 11.7	33.19	22	50.4
18	14 8 3.82	11.924	11 19 1.6	65.53	22	18.1	18	16 39 26.63	13.317	21 30 9.4	31.63	22	51.8
19	14 12 50.50	11.964	11 45 6.0	64.87	22	19.0	19	16 44 46.70	13.357	21 42 29.3	30.05	22	53.2
20	14 17 38.15	12.006	12 10 54.2	64.17	22	19.9	20	16 50 7.69	13.395	21 54 10.9	28.44	22	54.6
21	14 22 26.80	12.048	12 36 25.5	63.44	22	20.8	21	16 55 29.56	13.431	22 5 13.7	26.81	22	56.1
22	14 27 18.48	12.091	13 1 38.9	62.68	22	21.7	22	17 0 52.27	13.464	22 15 37.1	25.16	22	57.5
23	14 32 7.20	12.135	13 26 33.7	61.89	22	22.6	23	17 6 15.78	13.496	22 25 20.6	23.49	22	59.0
24	14 36 58.99	12.180	13 51 9.0	61.07	22	23.5	24	17 11 40.02	13.528	22 34 23.6	21.80	23	0.5
25	14 41 51.86	12.225	14 15 24.0	60.21	22	24.5	25	17 17 4.95	13.554	22 42 46.2	20.09	23	2.0
26	14 46 45.82	12.271	14 39 17.9	59.31	22	25.5	26	17 22 30.53	13.580	22 50 27.5	18.36	23	3.5
27	14 51 40.90	12.318	15 2 50.0	58.38	22	26.5	27	17 27 56.70	13.604	22 57 27.3	16.63	23	5.0
28	14 56 37.11	12.366	15 25 59.4	57.43	22	27.5	28	17 33 23.40	13.625	23 3 45.2	14.88	23	6.5
29	15 1 34.47	12.414	15 48 45.4	56.44	22	28.6	29	17 38 50.59	13.644	23 9 21.0	13.11	23	8.0
30	15 6 32.98	12.463	16 11 7.2	55.41	22	29.7	30	17 44 18.21	13.661	23 14 14.2	11.33	23	9.5
31	15 11 32.66	12.511	16 33 4.0	54.35	22	30.7	31	17 49 46.20	13.675	23 18 24.7	9.54	23	11.1
32	15 16 33.52	+12.560	-16 54 35.0	-53.26	22	31.8	32	17 55 14.50	+13.687	-23 21 52.3	-7.75	23	12.6
Day of the Month. 2d. 7th. 12th. 17th. 22d. 27th.							Day of the Month. 2d. 7th. 12th. 17th. 22d. 27th. 32d.						
Semidiameter 5.9 5.8 5.7 5.6 5.5 5.5							Semidiameter 5.4 5.4 5.3 5.3 5.2 5.2 5.2						
Hor. Parallax 6.1 6.0 5.9 5.8 5.7 5.7							Hor. Parallax 5.6 5.6 5.5 5.5 5.4 5.4 5.3						

+ prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations are increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
Noon.	Noon.	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	Noon.		
h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m	
1	17 18 39.07	+7.924	23 29 6.8	-0.43	22 32.8	1	18 58 54.10	+8.148	23 28 13.5	+9.80	22 10.9
2	17 21 49.67	7.949	23 32 45.9	8.83	22 32.1	2	19 2 9.64	8.146	23 24 10.8	10.43	22 10.2
3	17 25 0.62	7.963	23 36 10.9	8.94	22 31.3	3	19 5 25.10	8.143	23 19 53.0	11.05	22 9.6
4	17 28 11.90	7.976	23 39 21.7	7.65	22 30.6	4	19 8 40.49	8.139	23 15 20.3	11.68	22 8.9
5	17 31 23.50	7.989	23 42 18.3	7.06	22 29.8	5	19 11 55.79	8.135	23 10 32.6	12.30	22 8.2
6	17 34 35.41	8.002	23 45 0.5	6.46	22 29.1	6	19 15 10.98	8.130	23 5 30.1	12.93	22 7.5
7	17 37 47.63	8.014	23 47 28.3	5.85	22 28.3	7	19 18 26.06	8.125	23 0 12.8	13.53	22 6.8
8	17 41 0.13	8.026	23 49 41.5	5.24	22 27.6	8	19 21 41.01	8.120	22 54 40.7	14.15	22 6.1
9	17 44 12.89	8.038	23 51 40.0	4.63	22 26.9	9	19 24 55.82	8.114	22 48 53.9	14.76	22 5.4
10	17 47 25.92	8.048	23 53 23.9	4.02	22 26.1	10	19 28 10.49	8.108	22 42 52.4	15.37	22 4.7
11	17 50 39.19	8.058	23 54 53.1	3.40	22 25.5	11	19 31 25.00	8.101	22 36 36.4	15.97	22 4.0
12	17 53 52.71	8.067	23 56 7.6	2.79	22 24.7	12	19 34 39.34	8.094	22 30 5.8	16.58	22 3.3
13	17 57 6.45	8.076	23 57 7.3	2.17	22 24.0	13	19 37 53.51	8.086	22 23 20.8	17.18	22 2.6
14	18 0 20.41	8.085	23 57 52.1	1.55	22 23.3	14	19 41 7.49	8.078	22 16 21.4	17.78	22 1.9
15	18 3 34.57	8.094	23 58 21.9	0.92	22 22.6	15	19 44 21.28	8.070	22 9 7.7	18.37	22 1.2
16	18 6 48.92	8.102	23 58 36.7	-0.30	22 21.9	16	19 47 34.86	8.062	22 1 39.7	18.96	22 0.4
17	18 10 3.45	8.109	23 58 36.4	+0.33	22 21.2	17	19 50 48.23	8.053	21 53 57.6	19.55	21 59.7
18	18 13 18.15	8.116	23 58 21.1	0.96	22 20.5	18	19 54 1.38	8.043	21 46 1.5	20.13	21 59.0
19	18 16 33.02	8.122	23 57 50.7	1.59	22 19.8	19	19 57 14.29	8.033	21 37 51.4	20.71	21 58.3
20	18 19 48.03	8.128	23 57 5.0	2.22	22 19.1	20	20 0 26.97	8.023	21 29 27.5	21.28	21 57.5
21	18 23 3.16	8.133	23 56 4.2	2.86	22 18.4	21	20 3 39.40	8.012	21 20 49.9	21.85	21 56.8
22	18 26 18.42	8.138	23 54 48.3	3.49	22 17.8	22	20 6 51.57	8.001	21 11 58.7	22.41	21 56.0
23	18 29 33.78	8.142	23 53 17.1	4.12	22 17.1	23	20 10 3.47	7.989	21 2 53.9	22.97	21 55.3
24	18 32 49.23	8.145	23 51 30.8	4.75	22 16.4	24	20 13 15.09	7.977	20 53 35.9	23.53	21 54.5
25	18 36 4.75	8.148	23 49 29.2	5.39	22 15.7	25	20 16 26.42	7.965	20 44 4.7	24.08	21 53.8
26	18 39 20.33	8.150	23 47 12.5	6.02	22 15.0	26	20 19 37.46	7.953	20 34 20.3	24.62	21 53.0
27	18 42 35.95	8.151	23 44 40.6	6.65	22 14.3	27	20 22 48.19	7.940	20 24 23.0	25.16	21 52.3
28	18 45 51.50	8.152	23 41 53.5	7.28	22 13.7	28	20 25 58.61	7.927	20 14 12.9	25.69	21 51.5
29	18 49 7.24	8.152	23 38 51.2	7.92	22 13.0	29	20 29 8.70	7.913	20 3 50.0	26.22	21 50.7
30	18 52 22.88	8.151	23 35 33.7	8.55	22 12.3	30	20 32 18.45	7.899	19 53 14.6	26.73	21 49.9
31	18 55 38.51	8.150	23 32 1.1	9.18	22 11.6	31	20 35 27.86	7.885	19 42 26.9	27.24	21 49.1
32	18 58 54.10	+8.148	23 28 13.5	+9.80	22 10.9	32	20 38 36.93	+7.870	19 31 26.9	+27.75	21 48.3
Day of the Month.						Day of the Month.					
1st. 6th. 11th. 16th. 21st. 26th. 31st.						5th. 10th. 15th. 20th. 25th.					
Semidiameter						Semidiameter					
Hor. Parallax						Hor. Parallax					
2.1 2.1 2.2 2.2 2.2 2.2 2.3						2.3 2.3 2.3 2.4 2.4					
3.7 3.7 3.8 3.8 3.9 3.9 3.9						4.0 4.0 4.1 4.1 4.2					

NOTE.—North declinations are marked +, south declinations —

GREENWICH MEAN TIME.

MARCH.

APRIL.

Day of Month.	Apparent Right Ascension.			Var. of R. A. for 1 Hour.	Apparent Declination.			Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.			Var. of R. A. for 1 Hour.	Apparent Declination.			Var. of Dec. for 1 Hour.	Meridian Passage.		
	Noon.				Noon.						Noon.				Noon.						
	h	m	s	s	°	'	"	"	h	m		h	m	s	s	°	'	"	"	h	m
1	20	29	8.70	+7.913	20	3	50.0	+26.22	21	50.7	1	22	4	21.81	+7.439	13	11	5.7	+39.23	21	23.4
2	20	32	18.45	7.899	19	53	14.6	26.73	21	49.9	2	22	7	20.16	7.423	12	55	20.5	39.53	21	22.4
3	20	35	27.86	7.885	19	42	26.9	27.24	21	49.1	3	22	10	18.14	7.408	12	39	28.1	39.82	21	21.5
4	20	38	36.93	7.870	19	31	26.9	27.75	21	48.3	4	22	13	15.76	7.393	12	23	28.9	40.10	21	20.6
5	20	41	45.65	7.855	19	20	14.8	28.25	21	47.5	5	22	16	13.01	7.378	12	7	23.0	40.38	21	19.6
6	20	44	54.01	7.840	19	8	50.8	28.75	21	46.7	6	22	19	9.90	7.363	11	51	10.5	40.65	21	18.6
7	20	48	2.01	7.825	18	57	15.0	29.24	21	45.9	7	22	22	6.44	7.348	11	34	51.6	40.91	21	17.6
8	20	51	9.64	7.811	18	45	27.5	29.72	21	45.1	8	22	25	2.63	7.334	11	18	26.6	41.17	21	16.6
9	20	54	16.91	7.796	18	33	28.6	30.19	21	44.3	9	22	27	58.48	7.320	11	1	55.6	41.42	21	15.6
10	20	57	23.82	7.780	18	21	18.3	30.66	21	43.4	10	22	30	53.99	7.307	10	45	18.6	41.66	21	14.6
11	21	0	30.36	7.764	18	8	56.8	31.12	21	42.6	11	22	33	49.18	7.293	10	28	36.0	41.88	21	13.5
12	21	3	36.53	7.749	17	56	24.2	31.58	21	41.7	12	22	36	44.05	7.280	10	11	48.1	42.10	21	12.5
13	21	6	42.33	7.733	17	43	40.7	32.03	21	40.9	13	22	39	38.60	7.267	9	54	54.8	42.32	21	11.5
14	21	9	47.76	7.717	17	30	46.4	32.48	21	40.0	14	22	42	32.83	7.254	9	37	56.4	42.53	21	10.4
15	21	12	52.81	7.702	17	17	41.5	32.92	21	39.2	15	22	45	26.76	7.241	9	20	53.0	42.74	21	9.4
16	21	15	57.49	7.687	17	4	26.2	33.35	21	38.3	16	22	48	20.39	7.229	9	3	44.8	42.94	21	8.3
17	21	19	1.81	7.672	16	51	0.7	33.77	21	37.4	17	22	51	13.74	7.217	8	46	32.1	43.12	21	7.3
18	21	22	5.75	7.656	16	37	25.0	34.19	21	37.5	18	22	54	6.80	7.205	8	29	15.0	43.29	21	6.2
19	21	25	9.32	7.640	16	23	39.4	34.60	21	35.6	19	22	56	59.58	7.193	8	11	53.7	43.46	21	5.1
20	21	28	12.51	7.625	16	9	44.0	35.00	21	34.7	20	22	59	52.09	7.182	7	54	28.4	43.63	21	4.1
21	21	31	15.33	7.609	15	55	39.1	35.40	21	33.8	21	23	2	44.33	7.171	7	36	59.4	43.79	21	3.0
22	21	34	17.79	7.594	15	41	24.7	35.79	21	32.9	22	23	5	36.30	7.160	7	19	26.8	43.93	21	1.9
23	21	37	19.88	7.578	15	27	1.1	36.17	21	32.0	23	23	8	28.01	7.149	7	1	50.7	44.06	21	0.8
24	21	40	21.60	7.563	15	12	28.5	36.54	21	31.1	24	23	11	19.46	7.138	6	44	11.5	44.19	20	59.7
25	21	43	22.94	7.548	14	57	47.0	36.90	21	30.2	25	23	14	10.65	7.128	6	26	29.3	44.31	20	58.7
26	21	46	23.90	7.533	14	42	56.9	37.26	21	29.2	26	23	17	1.60	7.117	6	8	44.4	44.42	20	57.6
27	21	49	24.49	7.518	14	27	58.4	37.61	21	28.3	27	23	19	52.30	7.107	5	50	57.0	44.52	20	56.5
28	21	52	24.70	7.500	14	12	51.6	37.95	21	27.3	28	23	22	42.76	7.097	5	33	7.3	44.61	20	55.4
29	21	55	24.54	7.485	13	57	36.7	38.28	21	26.4	29	23	25	32.98	7.087	5	15	15.3	44.70	20	54.2
30	21	58	24.00	7.469	13	42	14.0	38.60	21	25.4	30	23	28	22.96	7.077	4	57	21.3	44.78	20	53.1
31	22	1	23.09	7.454	13	26	43.6	38.92	21	24.4	31	23	31	12.71	7.068	4	39	25.5	44.85	20	52.0
32	22	4	21.81	+7.439	13	11	5.7	+39.23	21	23.4	32	23	34	2.24	+7.059	4	21	28.1	+44.92	20	50.9
Day of the Month.		3d.	7th.	12th.	17th.	22d.	27th.	Day of the Month.		1st.	6th.	11th.	16th.	21st.	26th.						
Semidiameter		24"	24"	25"	25"	25"	26"	Semidiameter		26"	26"	27"	27"	27"	28"						
Hor. Parallax		4.2	4.3	4.3	4.4	4.4	4.5	Hor. Parallax		4.5	4.6	4.7	4.7	4.8	4.8						

+ prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
1	23 31 12.71	+7.068	-4 39 25.5	+44.85	20 52.0	1	0 57 37.78	+6.906	+4 35 2.1	+43.37	20 16.2
2	23 34 2.24	7.059	4 21 28.1	44.99	20 50.9	2	1 0 23.52	6.904	4 52 21.4	43.21	20 15.0
3	23 36 51.55	7.050	4 3 29.4	44.97	20 49.8	3	1 3 9.21	6.902	5 9 36.7	43.05	20 13.8
4	23 39 40.65	7.042	3 45 29.4	45.02	20 48.6	4	1 5 54.85	6.900	5 26 47.8	42.88	20 12.6
5	23 42 29.54	7.033	3 27 28.4	45.06	20 47.5	5	1 8 40.45	6.899	5 43 54.6	42.69	20 11.5
6	23 45 18.23	7.025	3 9 26.5	45.09	20 46.4	6	1 11 26.01	6.898	6 0 57.0	42.50	20 10.3
7	23 48 6.73	7.017	2 51 24.0	45.12	20 45.3	7	1 14 11.55	6.897	6 17 54.8	42.30	20 9.1
8	23 50 55.05	7.010	2 33 20.8	45.14	20 44.1	8	1 16 57.06	6.896	6 34 47.7	42.10	20 7.9
9	23 53 43.20	7.003	2 15 17.3	45.15	20 43.0	9	1 19 42.55	6.895	6 51 35.8	41.90	20 6.7
10	23 56 31.17	6.996	1 57 13.6	45.15	20 41.8	10	1 22 28.04	6.895	7 8 18.9	41.69	20 5.5
11	23 59 18.99	6.989	1 39 9.8	45.15	20 40.7	11	1 25 13.51	6.895	7 24 56.8	41.47	20 4.4
12	0 2 6.67	6.983	1 21 6.1	45.14	20 39.5	12	1 27 58.99	6.895	7 41 29.4	41.25	20 3.2
13	0 4 54.21	6.977	1 3 2.8	45.12	20 38.4	13	1 30 44.46	6.895	7 57 56.6	41.02	20 2.0
14	0 7 41.61	6.972	0 45 0.0	45.10	20 37.2	14	1 33 29.94	6.895	8 14 18.2	40.78	19 0.8
15	0 10 28.87	6.967	0 26 57.8	45.08	20 36.1	15	1 36 15.43	6.896	8 30 34.0	40.54	19 59.6
16	0 13 16.02	6.962	-0 8 56.4	45.04	20 34.9	16	1 39 0.92	6.896	8 46 43.9	40.28	19 58.5
17	0 16 3.06	6.957	+0 9 4.0	44.99	20 33.7	17	1 41 46.43	6.897	9 2 47.8	40.02	19 57.3
18	0 18 50.00	6.953	0 27 3.2	44.93	20 32.6	18	1 44 31.95	6.897	9 18 45.4	39.76	19 56.1
19	0 21 36.83	6.949	0 45 1.0	44.87	20 31.4	19	1 47 17.47	6.897	9 34 36.6	39.49	19 54.9
20	0 24 23.55	6.945	1 2 57.2	44.81	20 30.3	20	1 50 3.01	6.898	9 50 21.3	39.22	19 53.7
21	0 27 10.18	6.941	1 20 51.6	44.73	20 29.1	21	1 52 48.56	6.898	10 5 59.3	38.94	19 52.5
22	0 29 56.72	6.937	1 38 44.0	44.64	20 28.0	22	1 55 34.11	6.898	10 21 30.5	38.65	19 51.3
23	0 32 43.18	6.934	1 56 34.4	44.55	20 26.8	23	1 58 19.67	6.898	10 36 54.8	38.36	19 50.2
24	0 35 29.55	6.931	2 14 22.5	44.45	20 25.6	24	2 1 5.22	6.898	10 52 12.0	38.06	19 49.0
25	0 38 15.84	6.928	2 32 8.1	44.34	20 24.4	25	2 3 50.77	6.898	11 7 22.0	37.75	19 47.8
26	0 41 2.05	6.925	2 49 51.0	44.23	20 23.2	26	2 6 36.31	6.897	11 22 24.6	37.44	19 46.6
27	0 43 48.18	6.921	3 7 31.1	44.11	20 22.1	27	2 9 21.84	6.897	11 37 19.7	37.13	19 45.5
28	0 46 34.24	6.918	3 25 8.1	43.97	20 20.9	28	2 12 7.37	6.897	11 52 7.1	36.81	19 44.3
29	0 49 20.23	6.915	3 42 41.8	43.83	20 19.7	29	2 14 52.88	6.896	12 6 46.8	36.49	19 43.1
30	0 52 6.14	6.912	4 0 12.2	43.69	20 18.6	30	2 17 38.37	6.895	12 21 18.7	36.16	19 41.9
31	0 54 51.99	6.909	4 17 39.0	43.53	20 17.4	31	2 20 23.85	6.895	12 35 42.6	35.83	19 40.7
32	0 57 37.78	+6.906	+4 35 2.1	+43.37	20 16.2	32	2 23 9.32	+6.894	+12 49 58.3	+35.49	19 39.5
Day of the Month. 1st. 5th. 11th. 16th. 21st. 26th. 31st.						Day of the Month. 5th. 10th. 15th. 20th. 25th. 30th.					
Semidiameter 2'.8 2'.8 2'.9 2'.9 2'.9 3'.0 3'.0						Semidiameter 3'.1 3'.1 3'.2 3'.2 3'.3 3'.3					
Hor. Parallax 4.9 4.9 5.0 5.1 5.2 5.2 5.3						Hor. Parallax 5.4 5.5 5.5 5.6 5.7 5.8					

NOTE.—North declinations are marked +, south declinations —

GREENWICH MEAN TIME.

JULY.						AUGUST.							
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.		
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.			
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m		
1	2 20 23.85	+6.895	+12 35 42.6	+35.83	19 40.7	1	3 45 31.15	+6.788	+18 47 45.3	+23.67	19 3.6		
2	2 23 9.32	6.894	12 49 58.3	35.49	19 39.5	2	3 48 13.94	6.778	18 57 8.4	23.94	19 2.4		
3	2 25 54.77	6.893	13 4 5.9	35.14	19 38.3	3	3 50 56.51	6.768	19 6 21.2	22.81	19 1.1		
4	2 28 40.20	6.892	13 18 5.3	34.79	19 37.1	4	3 53 38.83	6.758	19 15 23.6	22.38	18 59.9		
5	2 31 25.62	6.892	13 31 56.2	34.44	19 35.9	5	3 56 20.92	6.748	19 24 15.7	21.95	18 58.6		
6	2 34 11.02	6.891	13 45 38.7	34.09	19 34.8	6	3 59 2.76	6.737	19 32 57.6	21.52	18 57.4		
7	2 36 56.39	6.890	13 59 12.7	33.73	19 33.6	7	4 1 44.34	6.726	19 41 29.1	21.09	18 56.1		
8	2 39 41.74	6.889	14 12 37.9	33.37	19 32.4	8	4 4 25.65	6.714	19 49 50.2	20.66	18 54.9		
9	2 42 27.08	6.888	14 25 54.4	33.01	19 31.2	9	4 7 6.68	6.702	19 58 1.0	20.23	18 53.6		
10	2 45 12.40	6.888	14 39 2.1	32.64	19 30.0	10	4 9 47.41	6.690	20 6 1.5	19.80	18 52.3		
11	2 47 57.70	6.887	14 52 0.8	32.26	19 28.8	11	4 12 27.84	6.678	20 13 51.6	19.37	18 51.1		
12	2 50 42.97	6.885	15 4 50.6	31.88	19 27.7	12	4 15 7.95	6.664	20 21 31.4	18.94	18 49.8		
13	2 53 28.20	6.883	15 17 31.2	31.49	19 26.5	13	4 17 47.73	6.650	20 29 0.9	18.51	18 48.5		
14	2 56 13.39	6.882	15 30 2.5	31.10	19 25.3	14	4 20 27.16	6.635	20 36 20.1	18.09	18 47.2		
15	2 58 58.55	6.880	15 42 24.5	30.79	19 24.1	15	4 23 6.22	6.619	20 43 29.1	17.66	18 46.0		
16	3 1 43.66	6.878	15 54 37.2	30.33	19 22.9	16	4 25 44.90	6.602	20 50 27.8	17.23	18 44.7		
17	3 4 28.72	6.876	16 6 40.5	29.93	19 21.7	17	4 28 23.18	6.585	20 57 16.3	16.81	18 43.3		
18	3 7 13.72	6.874	16 18 34.2	29.53	19 20.5	18	4 31 1.03	6.568	21 3 54.6	16.38	18 42.0		
19	3 9 58.64	6.870	16 30 18.3	29.13	19 19.3	19	4 33 38.43	6.549	21 10 22.8	15.96	18 40.7		
20	3 12 43.48	6.866	16 41 52.7	28.72	19 18.1	20	4 36 15.37	6.529	21 16 40.9	15.54	18 39.3		
21	3 15 28.23	6.862	16 53 17.3	28.31	19 16.9	21	4 38 51.83	6.508	21 22 49.0	15.12	18 38.0		
22	3 18 12.88	6.857	17 4 32.0	27.90	19 15.7	22	4 41 27.80	6.487	21 28 47.1	14.71	18 36.7		
23	3 20 57.40	6.852	17 15 36.8	27.48	19 14.5	23	4 44 3.24	6.464	21 34 35.3	14.30	18 35.3		
24	3 23 41.79	6.847	17 26 31.6	27.06	19 13.3	24	4 46 38.14	6.441	21 40 13.7	13.89	18 34.0		
25	3 26 26.05	6.841	17 37 16.4	26.64	19 12.1	25	4 49 12.49	6.419	21 45 42.3	13.48	18 32.6		
26	3 29 10.17	6.835	17 47 51.1	26.22	19 10.9	26	4 51 46.25	6.394	21 51 1.2	13.06	18 31.2		
27	3 31 54.13	6.828	17 58 15.6	25.80	19 9.7	27	4 54 19.40	6.368	21 56 10.5	12.67	18 29.8		
28	3 34 37.92	6.820	18 8 30.0	25.38	19 8.5	28	4 56 51.94	6.341	22 1 10.2	12.29	18 28.4		
29	3 37 21.52	6.813	18 18 34.2	24.96	19 7.3	29	4 59 23.84	6.314	22 6 0.5	11.90	18 27.0		
30	3 40 4.93	6.805	18 28 28.2	24.53	19 6.1	30	5 1 55.08	6.287	22 10 41.5	11.51	18 25.5		
31	3 42 48.15	6.797	18 38 11.9	24.10	19 4.8	31	5 4 25.64	6.259	22 15 13.3	11.13	18 24.1		
32	3 45 31.15	+6.788	+18 47 45.3	+23.67	19 3.6	32	5 6 55.52	+6.230	+22 19 35.9	+10.75	18 22.7		
Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.	Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter	3'4	3'4	3'5	3'6	3'7	3'7	Semidiameter	3'8	3'9	4'0	4'1	4'1	4'2
Hor. Parallax	5.9	6.0	6.1	6.2	6.3	6.4	Hor. Parallax	6.5	6.7	6.8	4.0	7.1	7.3

+ prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.																	
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.												
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.													
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m												
1	5 6 55.52	+6.230	+22 19 35.9	+10.75	18 22.7	1	6 14 46.27	+4.906	+23 31 30.4	+2.34	17 31.9												
2	5 9 24.70	6.200	22 23 49.5	10.38	18 21.2	2	6 16 43.36	4.847	23 32 24.8	2.18	17 29.9												
3	5 11 53.16	6.170	22 27 54.3	10.01	18 19.7	3	6 18 38.96	4.784	23 33 15.6	2.04	17 27.9												
4	5 14 20.90	6.139	22 31 50.1	9.64	18 18.2	4	6 20 33.03	4.720	23 34 3.1	1.91	17 25.8												
5	5 16 47.69	6.107	22 35 37.2	9.28	18 16.7	5	6 22 25.55	4.655	23 34 47.5	1.79	17 23.7												
6	5 19 14.10	6.075	22 39 15.8	8.93	18 15.2	6	6 24 16.48	4.588	23 35 29.1	1.68	17 21.6												
7	5 21 39.52	6.043	22 42 45.9	8.57	18 13.7	7	6 26 5.80	4.520	23 36 8.1	1.58	17 19.4												
8	5 24 4.12	6.007	22 46 7.7	8.23	18 12.1	8	6 27 53.47	4.450	23 36 44.9	1.49	17 17.3												
9	5 26 27.89	5.979	22 49 21.4	7.90	18 10.6	9	6 29 39.44	4.379	23 37 19.6	1.40	17 15.1												
10	5 28 50.81	5.936	22 52 27.0	7.57	18 9.0	10	6 31 23.69	4.306	23 37 52.6	1.35	17 12.9												
11	5 31 12.85	5.900	22 55 24.7	7.25	18 7.4	11	6 33 6.16	4.233	23 38 24.1	1.29	17 10.6												
12	5 33 34.00	5.861	22 58 14.6	6.93	18 5.8	12	6 34 46.83	4.156	23 38 54.4	1.24	17 8.3												
13	5 35 54.22	5.822	23 0 56.9	6.61	18 4.2	13	6 36 25.65	4.077	23 39 23.7	1.21	17 6.0												
14	5 38 13.47	5.781	23 3 31.8	6.30	18 2.6	14	6 38 2.57	3.996	23 39 52.5	1.19	17 3.7												
15	5 40 31.74	5.739	23 5 59.5	6.00	18 0.9	15	6 39 37.53	3.914	23 40 20.9	1.18	17 1.3												
16	5 42 49.00	5.697	23 8 20.1	5.71	17 59.2	16	6 41 10.50	3.831	23 40 49.2	1.19	16 58.9												
17	5 45 5.23	5.653	23 10 33.8	5.43	17 57.6	17	6 42 41.43	3.745	23 41 17.9	1.21	16 56.4												
18	5 47 20.38	5.607	23 12 40.8	5.16	17 55.9	18	6 44 10.27	3.656	23 41 47.1	1.24	16 54.0												
19	5 49 34.43	5.560	23 14 41.2	4.89	17 54.2	19	6 45 36.97	3.567	23 42 17.2	1.28	16 51.5												
20	5 51 47.34	5.513	23 16 35.3	4.62	17 52.4	20	6 47 1.49	3.474	23 42 48.4	1.34	16 48.9												
21	5 53 59.08	5.463	23 18 23.2	4.37	17 50.6	21	6 48 23.78	3.381	23 43 21.1	1.40	16 46.2												
22	5 56 9.63	5.413	23 20 5.2	4.13	17 48.8	22	6 49 43.79	3.285	23 43 55.5	1.47	16 43.6												
23	5 58 18.95	5.361	23 21 41.5	3.90	17 47.0	23	6 51 1.49	3.188	23 44 31.9	1.56	16 40.9												
24	6 0 27.03	5.309	23 23 12.2	3.67	17 45.2	24	6 52 16.81	3.088	23 45 10.6	1.67	16 38.2												
25	6 2 33.83	5.255	23 24 37.7	3.45	17 43.4	25	6 53 29.71	2.986	23 45 51.9	1.78	16 35.5												
26	6 4 39.32	5.200	23 25 58.0	3.24	17 41.5	26	6 54 40.14	2.882	23 46 36.0	1.90	16 32.7												
27	6 6 43.48	5.144	23 27 13.3	3.04	17 39.6	27	6 55 48.06	2.776	23 47 23.2	2.03	16 29.9												
28	6 8 46.28	5.087	23 28 24.0	2.85	17 37.7	28	6 56 53.43	2.669	23 48 13.7	2.18	16 27.0												
29	6 10 47.70	5.029	23 29 30.3	2.68	17 35.8	29	6 57 56.20	2.560	23 49 7.9	2.34	16 24.1												
30	6 12 47.71	4.969	23 30 32.3	2.51	17 33.9	30	6 58 56.34	2.449	23 50 6.0	2.52	16 21.1												
31	6 14 46.27	4.906	23 31 30.4	2.34	17 31.9	31	6 59 53.79	2.336	23 51 8.3	2.70	16 18.1												
32	6 16 43.36	+4.847	+23 32 24.8	+2.18	17 29.9	32	7 0 48.50	+2.221	+23 52 15.1	+2.09	16 15.0												
Day of the Month.						3d.	8th.	13th.	18th.	23d.	28th.	Day of the Month.						3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter						4'3	4'4	4'5	4'6	4'8	4'9	Semidiameter						5'1	5'3	5'5	5'7	5'9	5'1
Hor. Parallax						7.5	7.7	7.9	8.1	8.4	8.6	Hor. Parallax						8.9	9.2	9.6	9.9	10.3	10.7

NOTE.—North declinations are marked +, south declinations —

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	7 0 48.50	+2.221	+23 52 15.1	+2.89	16 15.0	1	7 2 46.41	-2.115	+25 13 7.4	+10.49	14 18.0
2	7 1 40.42	2.104	23 53 26.6	3.09	16 11.9	2	7 1 53.81	2.267	25 17 21.0	10.62	14 13.2
3	7 2 29.51	1.985	23 54 42.9	3.30	16 8.7	3	7 0 57.58	2.418	25 21 37.7	10.74	14 8.3
4	7 3 15.72	1.863	23 56 4.3	3.51	16 5.5	4	6 59 57.77	2.565	25 25 57.0	10.85	14 3.4
5	7 3 58.98	1.740	23 57 31.0	3.73	16 2.3	5	6 58 54.45	2.710	25 30 18.4	10.92	13 58.3
6	7 4 39.26	1.615	23 59 3.4	3.97	15 59.1	6	6 57 47.67	2.853	25 34 41.3	10.97	13 53.2
7	7 5 16.48	1.486	24 0 41.5	4.22	15 55.7	7	6 56 37.51	2.999	25 39 5.3	11.00	13 48.1
8	7 5 50.60	1.356	24 2 25.6	4.48	15 52.3	8	6 55 24.04	3.138	25 43 29.5	10.99	13 42.9
9	7 6 21.57	1.223	24 4 15.9	4.74	15 48.8	9	6 54 7.38	3.259	25 47 53.3	10.97	13 37.7
10	7 6 49.33	1.088	24 6 12.7	5.01	15 45.3	10	6 52 47.61	3.386	25 52 16.1	10.91	13 32.4
11	7 7 13.81	0.950	24 8 16.1	5.28	15 41.7	11	6 51 24.84	3.508	25 56 37.1	10.82	13 27.1
12	7 7 34.94	0.810	24 10 26.2	5.56	15 38.1	12	6 49 59.22	3.624	26 0 55.8	10.70	13 21.7
13	7 7 52.68	0.668	24 12 43.2	5.85	15 34.4	13	6 48 30.88	3.734	26 5 11.3	10.56	13 16.3
14	7 8 6.97	0.522	24 15 7.2	6.15	15 30.7	14	6 46 59.98	3.838	26 9 23.1	10.40	13 10.8
15	7 8 17.75	0.375	24 17 38.4	6.45	15 27.0	15	6 45 26.65	3.936	26 13 30.5	10.20	13 5.3
16	7 8 24.98	0.228	24 20 16.6	6.75	15 23.1	16	6 43 51.06	4.025	26 17 32.9	9.97	12 59.8
17	7 8 28.61	+0.075	24 23 2.0	7.04	15 19.2	17	6 42 13.44	4.106	26 21 29.5	9.71	12 54.2
18	7 8 28.60	-0.077	24 25 54.6	7.34	15 15.2	18	6 40 33.96	4.180	26 25 19.7	9.43	12 48.6
19	7 8 24.90	0.231	24 28 54.3	7.63	15 11.2	19	6 38 52.81	4.244	26 29 2.8	9.14	12 43.0
20	7 8 17.49	0.387	24 32 1.0	7.93	15 7.1	20	6 37 10.26	4.299	26 32 38.3	8.81	12 37.4
21	7 8 6.32	0.545	24 35 14.8	8.21	15 2.9	21	6 35 26.48	4.344	26 36 5.6	8.45	12 31.7
22	7 7 51.39	0.702	24 38 35.4	8.49	14 58.7	22	6 33 41.71	4.389	26 39 24.1	8.08	12 26.0
23	7 7 32.66	0.880	24 42 2.6	8.76	14 54.4	23	6 31 56.16	4.409	26 42 33.5	7.69	12 20.3
24	7 7 10.14	1.090	24 45 36.2	9.02	14 50.1	24	6 30 10.10	4.425	26 45 33.4	7.29	12 14.7
25	7 6 43.81	1.177	24 49 16.0	9.28	14 45.7	25	6 28 23.75	4.439	26 48 23.3	6.87	12 9.0
26	7 6 13.08	1.235	24 53 1.7	9.52	14 41.2	26	6 26 37.36	4.430	26 51 3.1	6.44	12 3.3
27	7 5 39.75	1.492	24 56 53.1	9.75	14 36.7	27	6 24 51.15	4.417	26 53 32.5	6.00	11 57.6
28	7 5 2.04	1.650	25 0 49.8	9.96	14 32.1	28	6 23 5.35	4.395	26 55 51.3	5.56	11 51.9
29	7 4 20.56	1.807	25 4 51.4	10.16	14 27.5	29	6 21 20.20	4.363	26 57 59.5	5.11	11 46.2
30	7 3 35.34	1.961	25 8 57.4	10.33	14 22.8	30	6 19 35.92	4.322	26 59 57.1	4.67	11 40.5
31	7 2 46.41	2.115	25 13 7.4	10.49	14 18.0	31	6 17 52.71	4.274	27 1 44.0	4.23	11 34.9
32	7 1 53.81	-2.267	+25 17 21.0	+10.62	14 13.2	32	6 16 10.76	-4.218	+27 3 20.3	+3.79	11 29.3
Day of the Month.						Day of the Month.					
2d. 7th. 12th. 17th. 22d. 27th.						2d. 7th. 12th. 17th. 22d. 27th.					
Semidiameter 6.4 6.6 6.9 7.1 7.4 7.7						Semidiameter 7.9 8.1 8.3 8.4 8.4 8.3					
Hor. Parallax 11.1 11.6 11.9 12.5 13.0 13.4						Hor. Parallax 13.8 14.2 14.5 14.6 14.6 14.6					

+ prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	0 42 17.12	+0.837	+3 8 16.6	+6.11	5 56.3	1	0 57 24.46	+1.557	+4 52 14.7	+10.31	4 9.5
2	0 42 37.54	0.865	3 10 45.2	6.98	5 52.7	2	0 58 2.04	1.576	4 56 23.5	10.41	4 6.2
3	0 42 58.02	0.892	3 13 17.8	6.45	5 49.1	3	0 58 40.07	1.594	5 0 34.7	10.51	4 2.9
4	0 43 20.35	0.919	3 15 54.4	6.61	5 45.5	4	0 59 18.54	1.612	5 4 48.3	10.61	3 59.6
5	0 43 42.72	0.946	3 18 35.0	6.77	5 42.0	5	0 59 57.44	1.630	5 9 4.1	10.71	3 56.3
6	0 44 5.73	0.973	3 21 19.4	6.93	5 38.4	6	1 0 36.76	1.647	5 13 22.2	10.80	3 53.0
7	0 44 29.37	0.998	3 24 7.6	7.09	5 34.8	7	1 1 16.49	1.664	5 17 42.4	10.89	3 49.7
8	0 44 53.63	1.024	3 26 59.5	7.24	5 31.3	8	1 1 56.63	1.681	5 22 4.7	10.98	3 46.4
9	0 45 18.51	1.049	3 29 55.1	7.39	5 27.8	9	1 2 37.19	1.698	5 26 29.1	11.06	3 43.2
10	0 45 44.00	1.074	3 32 54.3	7.54	5 24.3	10	1 3 18.13	1.714	5 30 55.5	11.14	3 40.0
11	0 46 10.09	1.099	3 35 57.1	7.69	5 20.8	11	1 3 59.46	1.730	5 35 23.9	11.22	3 36.7
12	0 46 36.77	1.124	3 39 3.6	7.84	5 17.3	12	1 4 41.17	1.746	5 39 54.1	11.30	3 33.5
13	0 47 4.04	1.148	3 42 13.5	7.98	5 13.9	13	1 5 23.25	1.761	5 44 26.2	11.38	3 30.3
14	0 47 31.89	1.172	3 45 26.8	8.12	5 10.4	14	1 6 5.70	1.776	5 49 0.1	11.45	3 27.1
15	0 48 0.31	1.196	3 48 43.5	8.26	5 6.9	15	1 6 48.51	1.791	5 53 35.8	11.52	3 23.8
16	0 48 29.29	1.219	3 52 3.5	8.40	5 3.4	16	1 7 31.68	1.806	5 58 13.2	11.59	3 20.6
17	0 48 58.83	1.242	3 55 26.7	8.54	5 0.0	17	1 8 15.20	1.821	6 2 52.3	11.66	3 17.4
18	0 49 28.92	1.265	3 58 53.2	8.67	4 56.6	18	1 8 59.07	1.835	6 7 33.0	11.73	3 14.2
19	0 49 59.55	1.288	4 2 22.8	8.80	4 53.2	19	1 9 43.28	1.849	6 12 15.2	11.80	3 11.0
20	0 50 30.72	1.310	4 5 55.5	8.93	4 49.8	20	1 10 27.82	1.863	6 16 59.0	11.86	3 7.8
21	0 51 2.43	1.332	4 9 31.4	9.06	4 46.4	21	1 11 12.70	1.877	6 21 44.4	11.92	3 4.6
22	0 51 34.66	1.354	4 13 10.2	9.18	4 43.0	22	1 12 7.90	1.891	6 26 31.2	11.98	3 1.5
23	0 52 7.41	1.375	4 16 52.1	9.30	4 39.6	23	1 12 43.42	1.904	6 31 19.4	12.04	2 58.3
24	0 52 40.67	1.396	4 20 37.0	9.42	4 36.2	24	1 13 29.26	1.917	6 36 9.0	12.10	2 55.1
25	0 53 14.43	1.417	4 24 24.7	9.54	4 32.9	25	1 14 15.42	1.930	6 40 59.9	12.15	2 51.9
26	0 53 48.70	1.438	4 28 15.3	9.66	4 29.5	26	1 15 1.88	1.944	6 45 52.1	12.20	2 48.8
27	0 54 23.46	1.459	4 32 8.6	9.77	4 26.1	27	1 15 48.63	1.954	6 50 45.6	12.25	2 45.6
28	0 54 58.71	1.479	4 36 4.6	9.88	4 22.8	28	1 16 35.68	1.966	6 55 40.3	12.30	2 42.4
29	0 55 34.45	1.499	4 40 3.3	9.99	4 19.5	29	1 17 23.01	1.978	7 0 36.0	12.35	2 39.3
30	0 56 10.66	1.519	4 44 4.6	10.10	4 16.1	30	1 18 10.61	1.989	7 5 32.8	12.39	2 36.2
31	0 56 47.33	1.538	4 48 8.4	10.21	4 12.8	31	1 18 58.48	2.000	7 10 30.6	12.43	2 33.0
32	0 57 24.46	+1.557	+4 52 14.7	+10.31	4 9.5	32	1 19 46.62	+2.011	+7 15 29.4	+12.47	2 29.9
Day of the Month.	1st.	11th.	21st.	31st.		Day of the Month.	1st.	11th.	21st.	31st.	
Polar Semidiameter	19".3	16".7	18".2	17".7		Polar Semidiameter	17".7	17".2	16".8	16".5	
Horizontal Parallax	1.8	1.8	1.7	1.7		Horizontal Parallax	1.7	1.6	1.6	1.6	

NOTE.—North declinations are marked +, south declinations —

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
1	h m s	s	° ' "	"	h m	1	h m s	s	° ' "	"	h m
1	1 17 23.01	+1.978	+7 0 36.0	+12.35	2 39.3	1	1 43 41.45	+2.233	+9 38 39.6	+12.89	1 3.7
2	1 18 10.61	1.989	7 5 32.8	12.39	2 36.2	2	1 44 35.12	2.238	9 43 48.8	12.88	1 0.7
3	1 18 58.48	2.000	7 10 30.6	12.43	2 33.0	3	1 45 28.90	2.243	9 48 57.8	12.87	0 57.6
4	1 19 46.62	2.011	7 15 29.4	12.47	2 29.9	4	1 46 22.78	2.248	9 54 6.6	12.86	0 54.6
5	1 20 35.03	2.022	7 20 29.1	12.51	2 26.8	5	1 47 16.77	2.252	9 59 15.1	12.85	0 51.5
6	1 21 23.70	2.033	7 25 29.6	12.54	2 23.7	6	1 48 10.86	2.256	10 4 23.2	12.83	0 48.5
7	1 22 12.62	2.043	7 30 31.0	12.57	2 20.5	7	1 49 5.04	2.260	10 9 31.0	12.82	0 45.4
8	1 23 1.77	2.053	7 35 33.1	12.60	2 17.4	8	1 49 59.32	2.264	10 14 38.4	12.80	0 42.4
9	1 23 51.16	2.063	7 40 36.0	12.63	2 14.3	9	1 50 53.68	2.268	10 19 45.3	12.78	0 39.4
10	1 24 40.78	2.073	7 45 39.7	12.66	2 11.2	10	1 51 48.13	2.271	10 24 51.8	12.76	0 36.3
11	1 25 30.63	2.082	7 50 44.0	12.69	2 8.1	11	1 52 42.67	2.274	10 29 57.8	12.74	0 33.3
12	1 26 20.70	2.091	7 55 48.9	12.72	2 5.0	12	1 53 37.28	2.277	10 35 3.3	12.72	0 30.3
13	1 27 10.99	2.100	8 0 54.4	12.74	2 1.9	13	1 54 31.96	2.280	10 40 8.2	12.70	0 27.3
14	1 28 1.48	2.109	8 6 0.5	12.76	1 58.8	14	1 55 26.71	2.283	10 45 12.5	12.68	0 24.2
15	1 28 52.18	2.117	8 11 7.1	12.78	1 55.7	15	1 56 21.53	2.286	10 50 16.3	12.65	0 21.2
16	1 29 43.08	2.125	8 16 14.1	12.80	1 52.6	16	1 57 16.41	2.288	10 55 19.4	12.62	0 18.2
17	1 30 34.18	2.133	8 21 21.5	12.82	1 49.6	17	1 58 11.34	2.290	11 0 21.9	12.59	0 15.2
18	1 31 25.48	2.141	8 26 29.3	12.84	1 46.5	18	1 59 6.32	2.292	11 5 23.7	12.56	0 12.2
19	1 32 16.96	2.149	8 31 37.5	12.85	1 43.4	19	2 0 1.36	2.294	11 10 24.8	12.53	0 9.2
20	1 33 8.63	2.157	8 36 46.0	12.86	1 40.3	20	2 0 56.44	2.296	11 15 25.1	12.50	0 6.2
21	1 34 0.48	2.164	8 41 54.8	12.87	1 37.2	21	2 1 51.56	2.298	11 20 24.7	12.47	0 3.1
22	1 34 52.50	2.171	8 47 3.9	12.88	1 34.2	22	2 2 46.73	2.299	11 25 23.5	12.44	0 0.1
23	1 35 44.70	2.178	8 52 13.2	12.89	1 31.1	23	2 3 41.93	2.300	11 30 21.5	12.40	23 57.1
24	1 36 37.06	2.185	8 57 22.7	12.89	1 28.1	24	2 4 37.15	2.301	11 35 18.6	12.36	23 54.1
25	1 37 29.59	2.192	9 2 32.3	12.90	1 25.0	25	2 5 32.39	2.302	11 40 14.8	12.32	23 51.1
26	1 38 22.28	2.199	9 7 42.0	12.90	1 22.0	26	2 6 27.65	2.303	11 45 10.0	12.28	23 48.1
27	1 39 15.12	2.205	9 12 51.7	12.90	1 19.0	27	2 7 22.92	2.303	11 50 4.3	12.24	23 45.0
28	1 40 8.11	2.211	9 18 1.4	12.90	1 15.9	28	2 8 18.21	2.303	11 54 57.6	12.20	23 42.0
29	1 41 1.25	2.217	9 23 11.1	12.90	1 12.9	29	2 9 13.50	2.303	11 59 49.9	12.16	23 39.0
30	1 41 54.52	2.223	9 28 20.7	12.90	1 9.8	30	2 10 8.79	2.303	12 4 41.2	12.12	23 36.0
31	1 42 47.92	2.228	9 33 30.2	12.89	1 6.8	31	2 11 4.07	2.303	12 9 31.4	12.07	23 33.0
32	1 43 41.45	+2.233	+9 38 39.6	+12.89	1 3.7	32	2 11 59.35	+2.233	+12 14 20.5	+12.03	23 30.0
Day of the Month.						Day of the Month.					
1st.						1st.					
11th.						11th.					
21st.						21st.					
31st.						31st.					
Polar Semidiameter 16.6						Polar Semidiameter 15.9					
Horizontal Parallax 1.6						Horizontal Parallax 1.5					
16.3						15.8					
1.5						1.5					
16.1						15.8					
1.5						1.5					

+ prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
Noon.	Noon.	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	Noon.		
h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m	
1	2 11 4.07	+2.303	+12 9 31.4	+12.07	23 30.0	1	2 39 10.20	+2.198	+14 28 24.3	+10.19	21 56.0
2	2 11 59.35	2.302	12 14 20.5	12.02	23 27.0	2	2 40 2.89	2.191	14 32 27.9	10.19	21 52.9
3	2 12 54.60	2.301	12 19 8.5	11.97	23 23.9	3	2 40 55.40	2.184	14 36 29.7	10.04	21 49.9
4	2 13 49.83	2.300	12 23 55.3	11.92	23 20.9	4	2 41 47.75	2.177	14 40 29.6	9.96	21 46.8
5	2 14 45.03	2.299	12 28 40.9	11.87	23 17.9	5	2 42 39.92	2.170	14 44 27.7	9.89	21 43.7
6	2 15 40.20	2.298	12 33 25.3	11.83	23 14.9	6	2 43 31.92	2.163	14 48 23.9	9.80	21 40.6
7	2 16 35.34	2.297	12 38 8.5	11.77	23 11.8	7	2 44 23.73	2.154	14 52 18.2	9.73	21 37.6
8	2 17 30.44	2.295	12 42 50.4	11.72	23 8.8	8	2 45 15.34	2.146	14 56 10.7	9.65	21 34.5
9	2 18 25.50	2.293	12 47 31.1	11.67	23 5.8	9	2 46 6.76	2.138	15 0 1.3	9.57	21 31.4
10	2 19 20.51	2.291	12 52 10.5	11.62	23 2.8	10	2 46 57.98	2.130	15 3 49.9	9.49	21 28.3
11	2 20 15.47	2.289	12 56 48.5	11.56	22 59.7	11	2 47 48.99	2.121	15 7 36.6	9.41	21 25.2
12	2 21 10.37	2.287	13 1 25.2	11.51	22 56.7	12	2 48 39.81	2.112	15 11 21.4	9.33	21 22.1
13	2 22 5.22	2.284	13 6 0.5	11.46	22 53.7	13	2 49 30.42	2.103	15 15 4.2	9.25	21 19.0
14	2 23 0.00	2.281	13 10 34.4	11.40	22 50.7	14	2 50 20.81	2.094	15 18 45.1	9.17	21 15.9
15	2 23 54.72	2.278	13 15 6.9	11.34	22 47.6	15	2 51 10.98	2.085	15 22 23.9	9.08	21 12.8
16	2 24 49.36	2.275	13 19 38.0	11.28	22 44.6	16	2 52 0.91	2.075	15 26 0.8	9.00	21 9.7
17	2 25 43.94	2.272	13 24 7.7	11.22	22 41.6	17	2 52 50.60	2.065	15 29 35.6	8.92	21 6.6
18	2 26 38.44	2.269	13 28 35.9	11.16	22 38.6	18	2 53 40.05	2.055	15 33 8.5	8.83	21 3.5
19	2 27 32.85	2.265	13 33 2.6	11.10	22 35.6	19	2 54 29.25	2.045	15 36 39.3	8.74	21 0.4
20	2 28 27.17	2.261	13 37 27.8	11.03	22 32.5	20	2 55 18.20	2.034	15 40 8.0	8.65	20 57.3
21	2 29 21.39	2.257	13 41 51.4	10.96	22 29.5	21	2 56 6.89	2.023	15 43 34.6	8.57	20 54.2
22	2 30 15.52	2.253	13 46 13.5	10.90	22 26.5	22	2 56 55.32	2.019	15 46 59.2	8.48	20 51.0
23	2 31 9.54	2.249	13 50 34.0	10.83	22 23.5	23	2 57 43.47	2.009	15 50 21.6	8.39	20 47.9
24	2 32 3.45	2.244	13 54 52.9	10.76	22 20.4	24	2 58 31.34	1.998	15 53 41.9	8.30	20 44.8
25	2 32 57.26	2.239	13 59 10.2	10.69	22 17.4	25	2 59 18.92	1.976	15 57 0.1	8.21	20 41.6
26	2 33 50.94	2.234	14 3 25.9	10.62	22 14.4	26	3 0 6.21	1.963	16 0 16.1	8.12	20 38.4
27	2 34 44.50	2.229	14 7 40.0	10.55	22 11.3	27	3 0 53.19	1.950	16 3 30.0	8.03	20 35.3
28	2 35 37.92	2.223	14 11 52.4	10.48	22 8.3	28	3 1 39.86	1.937	16 6 41.7	7.94	20 32.1
29	2 36 31.21	2.217	14 16 3.0	10.41	22 5.2	29	3 2 26.22	1.924	16 9 51.2	7.85	20 29.0
30	2 37 24.36	2.211	14 20 11.9	10.34	22 2.2	30	3 3 12.26	1.911	16 12 58.5	7.76	20 25.8
31	2 38 17.35	2.205	14 24 19.0	10.26	21 59.1	31	3 3 57.97	1.897	16 16 3.6	7.67	20 22.6
32	2 39 10.20	+2.198	+14 28 24.3	+10.19	21 56.0	32	3 4 43.34	+1.883	+16 19 6.4	+7.57	20 19.4
Day of the Month.	1st.	11th.	21st.	31st.		Day of the Month.	1st.	11th.	21st.	31st.	
Polar Semidiameter	15".8	15".8	16".0	16".2		Polar Semidiameter	16".6	16".4	16".7	17".0	
Horizontal Parallax	1.5	1.5	1.5	1.5		Horizontal Parallax	1.5	1.5	1.6	1.6	

NOTE.—North declinations are marked +, south declinations —

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	3 3 57.97	+1.807	+16 16 3.6	+7.67	20 22.6	1	3 24 15.56	+1.326	+17 32 23.4	+4.58	18 40.7
2	3 4 43.34	1.883	16 19 6.4	7.57	20 19.4	2	3 24 47.09	1.302	17 34 12.1	4.48	18 37.3
3	3 5 28.37	1.869	16 22 6.8	7.48	20 16.2	3	3 25 18.05	1.278	17 35 58.3	4.38	18 33.9
4	3 6 13.06	1.854	16 25 5.1	7.39	20 13.0	4	3 25 48.44	1.254	17 37 42.0	4.27	18 30.4
5	3 6 57.39	1.839	16 28 1.1	7.29	20 9.8	5	3 26 18.25	1.230	17 39 23.1	4.16	18 26.9
6	3 7 41.36	1.824	16 30 54.8	7.19	20 6.6	6	3 26 47.47	1.205	17 41 1.6	4.06	18 23.5
7	3 8 24.96	1.809	16 33 46.3	7.10	20 3.4	7	3 27 16.09	1.180	17 42 37.6	3.95	18 20.0
8	3 9 8.19	1.793	16 36 35.5	7.00	20 0.1	8	3 27 44.10	1.155	17 44 11.1	3.85	18 16.5
9	3 9 51.04	1.777	16 39 22.4	6.91	19 56.9	9	3 28 11.51	1.129	17 45 42.1	3.74	18 13.0
10	3 10 33.50	1.761	16 42 7.0	6.81	19 53.7	10	3 28 38.30	1.103	17 47 10.4	3.63	18 9.6
11	3 11 15.57	1.745	16 44 49.2	6.72	19 50.5	11	3 29 4.46	1.077	17 48 36.2	3.52	18 6.1
12	3 11 57.25	1.728	16 47 29.1	6.62	19 47.2	12	3 29 30.00	1.050	17 49 59.3	3.41	18 2.6
13	3 12 38.52	1.711	16 50 6.7	6.52	19 44.0	13	3 29 54.89	1.023	17 51 19.9	3.30	17 59.1
14	3 13 19.38	1.694	16 52 42.0	6.42	19 40.7	14	3 30 19.13	0.996	17 52 37.8	3.20	17 55.6
15	3 13 59.82	1.676	16 55 15.0	6.32	19 37.4	15	3 30 42.71	0.969	17 53 53.2	3.09	17 52.1
16	3 14 39.84	1.658	16 57 45.6	6.22	19 34.1	16	3 31 5.62	0.941	17 55 5.9	2.98	17 48.5
17	3 15 19.42	1.640	17 0 13.8	6.12	19 30.9	17	3 31 27.87	0.913	17 56 16.0	2.87	17 44.9
18	3 15 58.57	1.622	17 2 30.6	6.02	19 27.6	18	3 31 49.43	0.884	17 57 23.5	2.76	17 41.3
19	3 16 37.27	1.603	17 5 2.9	5.92	19 24.3	19	3 32 10.30	0.855	17 58 28.4	2.65	17 37.7
20	3 17 15.51	1.584	17 7 23.8	5.82	19 21.0	20	3 32 30.47	0.826	17 59 30.6	2.54	17 34.1
21	3 17 53.28	1.564	17 9 42.3	5.72	19 17.7	21	3 32 49.94	0.796	18 0 30.1	2.43	17 30.4
22	3 18 30.57	1.544	17 11 58.4	5.62	19 14.4	22	3 33 8.69	0.766	18 1 26.9	2.32	17 26.8
23	3 19 7.37	1.523	17 14 12.0	5.52	19 11.1	23	3 33 26.71	0.736	18 2 21.0	2.20	17 23.2
24	3 19 43.69	1.502	17 16 23.2	5.42	19 7.7	24	3 33 44.01	0.705	18 3 12.5	2.09	17 19.5
25	3 20 19.51	1.481	17 18 32.0	5.32	19 4.4	25	3 34 0.57	0.674	18 4 1.3	1.98	17 15.8
26	3 20 54.82	1.460	17 20 38.2	5.21	19 1.0	26	3 34 16.39	0.643	18 4 47.3	1.87	17 12.2
27	3 21 29.61	1.438	17 22 42.0	5.11	18 57.6	27	3 34 31.46	0.612	18 5 30.7	1.75	17 8.5
28	3 22 3.88	1.416	17 24 43.4	5.00	18 54.2	28	3 34 45.77	0.581	18 6 11.3	1.64	17 4.8
29	3 22 37.62	1.394	17 26 42.2	4.90	18 50.9	29	3 34 59.32	0.549	18 6 49.3	1.53	17 1.1
30	3 23 10.82	1.372	17 28 38.5	4.79	18 47.5	30	3 35 12.10	0.517	18 7 24.6	1.42	16 57.4
31	3 23 43.47	1.349	17 30 32.2	4.69	18 44.1	31	3 35 24.11	0.485	18 7 57.2	1.30	16 53.6
32	3 24 15.56	+1.326	+17 32 23.4	+4.58	18 40.7	32	3 35 35.36	+0.453	+18 8 27.1	+1.19	16 49.8
Day of the Month.	1st.	11th.	21st.	31st.		Day of the Month.	1st.	11th.	21st.	31st.	
Polar Semidiameter	17.0	17.4	17.8	18.3		Polar Semidiameter	18.4	18.9	19.5	20.2	
Horizontal Parallax	1.6	1.6	1.7	1.7		Horizontal Parallax	1.7	1.8	1.8	1.9	

+ prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	Noon.
h m s	s	° ' "	"	h m	h m s	s	° ' "	"	h m	h m s	s
1	3 35 35.36	+0.453	+18 8 27.1	+1.19	16 49.8	1	3 34 56.85	-0.563	+18 2 12.7	-2.91	14 51.0
2	3 35 45.84	0.420	18 8 54.2	1.08	16 46.0	2	3 34 42.96	0.595	18 1 18.5	2.32	14 46.8
3	3 35 55.53	0.387	18 9 18.6	0.96	16 42.2	3	3 34 28.29	0.627	18 0 21.6	2.42	14 42.6
4	3 36 4.43	0.354	18 9 40.3	0.85	16 38.4	4	3 34 12.86	0.658	17 59 22.2	2.53	14 38.4
5	3 36 12.53	0.321	18 9 59.2	0.73	16 34.6	5	3 33 56.68	0.689	17 58 20.4	2.63	14 34.2
6	3 36 19.84	-0.288	18 10 15.4	0.62	16 30.8	6	3 33 39.75	0.720	17 57 16.0	2.74	14 30.0
7	3 36 26.35	0.255	18 10 28.9	0.51	16 27.0	7	3 33 22.09	0.751	17 56 9.1	2.84	14 25.8
8	3 36 32.06	0.222	18 10 39.6	0.40	16 23.2	8	3 33 3.69	0.781	17 54 59.7	2.94	14 21.5
9	3 36 36.96	0.188	18 10 47.7	0.28	16 19.3	9	3 32 44.58	0.811	17 53 48.0	3.04	14 17.3
10	3 36 41.06	0.154	18 10 53.0	0.17	16 15.4	10	3 32 24.76	0.840	17 52 33.9	3.14	14 13.0
11	3 36 44.34	0.120	18 10 55.6	+0.06	16 11.6	11	3 32 4.25	0.869	17 51 17.4	3.24	14 8.7
12	3 36 46.80	0.086	18 10 55.5	-0.06	16 7.7	12	3 31 43.05	0.897	17 49 58.6	3.34	14 4.4
13	3 36 48.45	0.051	18 10 52.6	0.18	16 3.8	13	3 31 21.18	0.925	17 48 37.5	3.43	14 0.1
14	3 36 49.27	+0.017	18 10 46.9	0.30	15 59.9	14	3 30 58.65	0.952	17 47 14.1	3.52	13 55.8
15	3 36 49.27	-0.017	18 10 38.5	0.41	15 56.0	15	3 30 35.48	0.979	17 45 48.5	3.61	13 51.5
16	3 36 48.43	0.051	18 10 27.3	0.53	15 52.0	16	3 30 11.66	1.005	17 44 20.7	3.70	13 47.1
17	3 36 46.77	0.086	18 10 13.4	0.64	15 48.0	17	3 29 47.23	1.030	17 42 50.7	3.79	13 42.8
18	3 36 44.28	0.120	18 9 56.7	0.76	15 44.0	18	3 29 22.20	1.055	17 41 18.6	3.88	13 38.5
19	3 36 40.96	0.155	18 9 37.3	0.87	15 40.0	19	3 28 56.58	1.079	17 39 44.5	3.96	13 34.1
20	3 36 36.81	0.190	18 9 15.1	0.98	15 36.0	20	3 28 30.39	1.102	17 38 8.5	4.04	13 29.7
21	3 36 31.81	0.225	18 8 50.2	1.09	15 32.0	21	3 28 3.65	1.124	17 36 30.6	4.12	13 25.3
22	3 36 25.99	0.260	18 8 22.6	1.20	15 27.9	22	3 27 36.39	1.146	17 34 50.8	4.20	13 20.9
23	3 36 19.34	0.294	18 7 52.3	1.32	15 23.9	23	3 27 8.63	1.167	17 33 9.2	4.27	13 16.5
24	3 36 11.87	0.329	18 7 19.3	1.44	15 19.8	24	3 26 40.37	1.187	17 31 25.8	4.34	13 12.1
25	3 36 3.58	0.363	18 6 43.5	1.55	15 15.7	25	3 26 11.65	1.206	17 29 40.8	4.41	13 7.7
26	3 35 54.46	0.397	18 6 5.0	1.66	15 11.6	26	3 25 42.48	1.224	17 27 54.1	4.48	13 3.3
27	3 35 44.53	0.430	18 5 23.9	1.77	15 7.5	27	3 25 12.90	1.241	17 26 5.9	4.54	12 58.9
28	3 35 33.80	0.464	18 4 40.0	1.88	15 3.4	28	3 24 42.91	1.257	17 24 16.2	4.60	12 54.4
29	3 35 22.28	0.497	18 3 53.6	1.99	14 59.3	29	3 24 12.54	1.272	17 22 25.2	4.66	12 50.0
30	3 35 9.96	0.530	18 3 4.4	2.10	14 55.1	30	3 23 41.83	1.286	17 20 32.9	4.71	12 45.6
31	3 34 56.85	0.563	18 2 12.7	2.21	14 51.0	31	3 23 10.80	1.300	17 18 39.3	4.76	12 41.2
32	3 34 42.96	-0.595	+18 1 18.5	-2.32	14 46.8	32	3 22 39.45	-1.312	+17 16 44.5	-4.80	12 36.8
Day of the Month.						Day of the Month.					
1st.		11th.		21st.		1st.		11th.		21st.	
20'.3		20'.8		21'.5		22'.1		22'.6		23'.0	
1.9		2.0		2.0		2.1		2.1		2.2	
Polar Semidiameter						Polar Semidiameter					
Horizontal Parallax						Horizontal Parallax					

NOTE.—North declinations are marked +, south declinations—

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	3 22 39.45	-1.312	+17 16 44.5	-4.80	12 36.8	1	3 6 38.80	-1.198	+16 17 56.5	-4.37	10 23.8
2	3 22 7.83	1.323	17 14 48.7	4.84	12 32.4	2	3 6 10.26	1.179	16 16 12.5	4.39	10 18.4
3	3 21 35.95	1.333	17 12 51.9	4.88	12 27.9	3	3 5 42.19	1.159	16 14 30.5	4.31	10 14.0
4	3 21 3.84	1.342	17 10 54.2	4.92	12 23.4	4	3 5 14.60	1.138	16 12 50.4	4.13	10 9.6
5	3 20 31.51	1.350	17 8 55.7	4.95	12 18.9	5	3 4 47.52	1.117	16 11 12.4	4.04	10 5.2
6	3 19 59.00	1.357	17 6 56.4	4.98	12 14.5	6	3 4 20.96	1.095	16 9 36.5	3.95	10 0.8
7	3 19 26.32	1.364	17 4 56.4	5.01	12 10.0	7	3 3 54.95	1.072	16 8 2.9	3.85	9 56.5
8	3 18 53.50	1.370	17 2 55.9	5.03	12 5.5	8	3 3 29.50	1.048	16 6 31.7	3.75	9 52.1
9	3 18 20.57	1.374	17 0 55.0	5.05	12 1.0	9	3 3 4.63	1.024	16 5 2.9	3.65	9 47.7
10	3 17 47.54	1.377	16 58 53.7	5.06	11 56.6	10	3 2 40.36	0.999	16 3 36.6	3.54	9 43.4
11	3 17 14.46	1.379	16 56 52.1	5.07	11 52.1	11	3 2 16.70	0.973	16 2 12.8	3.43	9 39.1
12	3 16 41.35	1.380	16 54 50.3	5.08	11 47.6	12	3 1 53.65	0.946	16 0 51.6	3.32	9 34.8
13	3 16 8.21	1.381	16 52 48.4	5.08	11 43.1	13	3 1 31.25	0.919	15 59 33.2	3.21	9 30.5
14	3 15 35.08	1.380	16 50 46.5	5.08	11 38.7	14	3 1 9.51	0.892	15 58 17.6	3.09	9 26.2
15	3 15 2.00	1.378	16 48 44.7	5.07	11 34.2	15	3 0 48.44	0.864	15 57 4.8	2.97	9 22.0
16	3 14 28.97	1.374	16 46 43.2	5.06	11 29.7	16	3 0 28.05	0.835	15 55 55.0	2.85	9 17.7
17	3 13 56.04	1.369	16 44 42.0	5.05	11 25.2	17	3 0 8.36	0.806	15 54 48.2	2.73	9 13.5
18	3 13 23.22	1.363	16 42 41.2	5.03	11 20.8	18	2 59 49.39	0.776	15 53 44.3	2.60	9 9.3
19	3 12 50.54	1.357	16 40 40.9	5.00	11 16.3	19	2 59 31.13	0.746	15 52 43.5	2.47	9 5.1
20	3 12 18.03	1.350	16 38 41.2	4.97	11 11.8	20	2 59 13.61	0.715	15 51 45.9	2.34	9 0.8
21	3 11 45.72	1.341	16 36 42.3	4.93	11 7.3	21	2 58 56.84	0.684	15 50 51.5	2.20	8 56.6
22	3 11 13.63	1.331	16 34 44.2	4.89	11 2.8	22	2 58 40.82	0.652	15 50 0.4	2.06	8 52.4
23	3 10 41.79	1.321	16 32 47.1	4.85	10 58.3	23	2 58 25.56	0.620	15 49 12.6	1.92	8 48.2
24	3 10 10.22	1.310	16 30 51.1	4.81	10 53.8	24	2 58 11.09	0.587	15 48 28.1	1.78	8 44.0
25	3 9 38.93	1.297	16 28 56.2	4.76	10 49.3	25	2 57 57.39	0.554	15 47 47.0	1.64	8 39.9
26	3 9 7.97	1.283	16 27 2.5	4.71	10 44.8	26	2 57 44.49	0.521	15 47 9.3	1.50	8 35.8
27	3 8 37.35	1.268	16 25 10.2	4.65	10 40.4	27	2 57 32.38	0.488	15 46 35.0	1.36	8 31.7
28	3 8 7.10	1.252	16 23 19.4	4.59	10 36.0	28	2 57 21.07	0.455	15 46 4.2	1.22	8 27.6
29	3 7 37.25	1.235	16 21 30.1	4.52	10 31.6	29	2 57 10.57	0.421	15 45 36.8	1.07	8 23.5
30	3 7 7.81	1.217	16 19 42.4	4.45	10 27.2	30	2 57 0.87	0.387	15 45 13.0	0.92	8 19.4
31	3 6 38.80	1.198	16 17 56.5	4.37	10 22.8	31	2 56 51.98	0.353	15 44 52.7	0.77	8 15.3
32	3 6 10.26	-1.179	+16 16 12.5	-4.39	10 18.4	32	2 56 43.91	-0.319	+15 44 36.0	-0.63	8 11.2
Day of the Month.	1st.	11th.	21st.	31st.		Day of the Month.	1st.	11th.	21st.	31st.	
Polar Semidiameter	23.4	23.5	23.4	23.2		Polar Semidiameter	23.2	22.7	22.1	21.6	
Horizontal Parallax	2.2	2.2	2.2	2.2		Horizontal Parallax	2.2	2.1	2.1	2.0	

+ prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
1	h m s	s	° ' "	"	h m	1	h m s	s	° ' "	"	h m
1	1 25 48.08	+0.122	+6 16 57.0	+1.49	6 39.6	1	1 30 28.93	+0.619	+6 53 48.4	+4.31	4 42.4
2	1 25 51.19	0.139	6 17 34.1	1.60	6 35.7	2	1 30 43.95	0.633	6 55 32.9	4.39	4 38.8
3	1 25 54.71	0.156	6 18 13.6	1.70	6 31.9	3	1 30 59.31	0.647	6 57 19.2	4.46	4 35.1
4	1 25 58.64	0.172	6 18 55.6	1.80	6 28.0	4	1 31 15.00	0.661	6 59 7.2	4.53	4 31.4
5	1 26 2.99	0.190	6 19 40.0	1.90	6 24.1	5	1 31 31.02	0.674	7 0 57.1	4.60	4 27.7
6	1 26 7.75	0.207	6 20 26.9	2.00	6 20.3	6	1 31 47.37	0.688	7 2 48.5	4.67	4 24.1
7	1 26 12.92	0.224	6 21 16.1	2.10	6 14.4	7	1 32 4.04	0.701	7 4 41.6	4.74	4 20.4
8	1 26 18.51	0.241	6 22 7.6	2.20	6 12.6	8	1 32 21.03	0.714	7 6 36.4	4.81	4 16.8
9	1 26 24.50	0.258	6 23 1.5	2.30	6 8.8	9	1 32 38.34	0.727	7 8 32.7	4.88	4 13.1
10	1 26 30.88	0.275	6 23 57.8	2.39	6 5.0	10	1 32 55.95	0.740	7 10 30.8	4.95	4 9.5
11	1 26 37.67	0.292	6 24 56.4	2.49	6 1.1	11	1 33 13.88	0.753	7 12 30.4	5.02	4 5.9
12	1 26 44.86	0.308	6 25 57.4	2.59	5 57.3	12	1 33 32.10	0.766	7 14 31.6	5.08	4 2.2
13	1 26 52.45	0.325	6 27 0.6	2.68	5 53.5	13	1 33 50.62	0.778	7 16 34.2	5.14	3 59.6
14	1 27 0.42	0.341	6 28 6.1	2.78	5 49.7	14	1 34 9.44	0.791	7 18 38.3	5.20	3 55.0
15	1 27 8.80	0.358	6 29 13.8	2.87	5 45.9	15	1 34 28.55	0.803	7 20 43.8	5.26	3 51.4
16	1 27 17.57	0.374	6 30 23.8	2.96	5 42.1	16	1 34 47.94	0.814	7 22 50.7	5.32	3 47.8
17	1 27 26.72	0.390	6 31 35.9	3.05	5 38.4	17	1 35 7.62	0.826	7 24 59.0	5.38	3 44.2
18	1 27 36.26	0.406	6 32 50.2	3.14	5 34.6	18	1 35 27.58	0.838	7 27 8.7	5.44	3 40.6
19	1 27 46.19	0.422	6 34 6.6	3.23	5 30.8	19	1 35 47.82	0.849	7 29 19.7	5.49	3 37.0
20	1 27 56.50	0.438	6 35 25.3	3.32	5 27.1	20	1 36 8.32	0.860	7 31 32.0	5.54	3 33.4
21	1 28 7.18	0.453	6 36 46.0	3.41	5 23.3	21	1 36 29.10	0.872	7 33 45.7	5.60	3 29.8
22	1 28 18.23	0.469	6 38 8.9	3.49	5 19.6	22	1 36 50.14	0.883	7 36 0.6	5.65	3 26.2
23	1 28 29.66	0.484	6 39 33.8	3.58	5 15.8	23	1 37 11.45	0.893	7 38 16.7	5.70	3 22.6
24	1 28 41.46	0.500	6 41 0.9	3.67	5 12.1	24	1 37 33.01	0.904	7 40 34.1	5.75	3 19.1
25	1 28 53.63	0.515	6 42 30.0	3.75	5 8.4	25	1 37 54.82	0.914	7 42 52.5	5.79	3 15.5
26	1 29 6.17	0.530	6 44 1.1	3.83	5 4.6	26	1 38 16.89	0.925	7 45 12.2	5.84	3 11.9
27	1 29 19.07	0.545	6 45 34.1	3.92	5 0.9	27	1 38 39.20	0.935	7 47 33.0	5.89	3 8.4
28	1 29 32.33	0.560	6 47 9.2	4.00	4 57.2	28	1 39 1.75	0.945	7 49 54.7	5.93	3 4.8
29	1 29 45.96	0.575	6 48 46.2	4.08	4 53.5	29	1 39 24.54	0.954	7 52 17.6	5.97	3 1.2
30	1 29 59.93	0.590	6 50 25.1	4.15	4 49.8	30	1 39 47.56	0.964	7 54 41.4	6.01	2 57.7
31	1 30 14.26	0.604	6 52 5.8	4.23	4 46.1	31	1 40 10.80	0.973	7 57 6.2	6.05	2 54.1
32	1 30 28.93	+0.619	+6 53 48.4	+4.31	4 42.4	32	1 40 34.28	+0.982	+7 59 32.0	+6.09	2 50.6
Day of the Month.		1st.	11th.	21st.	31st.	Day of the Month.		1st.	11th.	21st.	31st.
Polar Semidiameter		8".6	8".5	8".3	8".2	Polar Semidiameter		8".2	8".0	7".9	7".8
Horizontal Parallax		1.0	1.0	0.9	0.9	Horizontal Parallax		0.9	0.9	0.9	0.9

NOTE.—North declinations are marked +, south declinations —

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	1 39 24.54	+0.954	+7 52 17.6	+5.97	3 1.2	1	1 52 44.03	+1.167	+9 12' 0.3	+6.70	1 12.6
2	1 39 47.56	0.964	7 54 41.4	6.01	2 57.7	2	1 53 12.09	1.171	9 14 41.0	6.70	1 9.2
3	1 40 10.80	0.973	7 57 6.2	6.05	2 54.1	3	1 53 40.25	1.175	9 17 22.0	6.71	1 5.7
4	1 40 34.28	0.982	7 59 32.0	6.09	2 50.6	4	1 54 8.49	1.178	9 20 3.0	6.71	1 2.2
5	1 40 57.96	0.991	8 1 58.7	6.13	2 47.1	5	1 54 36.81	1.181	9 22 44.1	6.71	0 58.8
6	1 41 21.87	1.000	8 4 26.2	6.16	2 43.5	6	1 55 5.22	1.185	9 25 25.2	6.71	0 55.3
7	1 41 45.98	1.009	8 6 54.6	6.20	2 40.0	7	1 55 33.70	1.188	9 28 6.2	6.71	0 51.9
8	1 42 10.30	1.017	8 9 23.8	6.23	2 36.5	8	1 56 2.26	1.191	9 30 47.2	6.71	0 48.4
9	1 42 34.81	1.025	8 11 53.9	6.26	2 33.0	9	1 56 30.87	1.194	9 33 28.3	6.71	0 44.9
10	1 42 59.52	1.033	8 14 24.7	6.30	2 29.4	10	1 56 59.56	1.197	9 36 9.2	6.70	0 41.5
11	1 43 24.40	1.041	8 16 56.2	6.33	2 35.9	11	1 57 28.31	1.199	9 38 49.9	6.70	0 38.0
12	1 43 49.48	1.048	8 19 28.5	6.35	2 22.4	12	1 57 57.12	1.202	9 41 30.6	6.69	0 34.6
13	1 44 14.74	1.056	8 22 1.4	6.38	2 18.9	13	1 58 25.97	1.204	9 44 11.1	6.68	0 31.1
14	1 44 40.18	1.063	8 24 35.0	6.41	2 15.4	14	1 58 54.87	1.205	9 46 51.5	6.67	0 27.7
15	1 45 5.79	1.070	8 27 9.3	6.43	2 11.9	15	1 59 23.81	1.207	9 49 31.6	6.67	0 24.2
16	1 45 31.58	1.077	8 29 44.1	6.46	2 8.4	16	1 59 52.79	1.209	9 52 11.6	6.66	0 20.8
17	1 45 57.53	1.084	8 32 19.5	6.49	2 4.9	17	2 0 21.81	1.210	9 54 51.2	6.65	0 17.3
18	1 46 24.65	1.091	8 34 55.4	6.50	2 1.4	18	2 0 50.87	1.212	9 57 30.7	6.63	0 13.9
19	1 46 49.92	1.097	8 37 31.7	6.53	1 57.9	19	2 1 19.96	1.213	10 0 9.9	6.62	0 10.4
20	1 47 16.35	1.104	8 40 8.6	6.55	1 54.4	20	2 1 49.07	1.214	10 2 48.8	6.61	0 7.0
21	1 47 42.93	1.111	8 42 46.0	6.57	1 50.9	21	2 2 18.21	1.215	10 5 27.4	6.60	0 3.5
22	1 48 9.65	1.117	8 45 23.8	6.59	1 47.4	22	2 2 47.36	1.215	10 8 5.5	6.58	0 0.0
23	1 48 36.52	1.122	8 48 2.0	6.60	1 43.9	23	2 3 16.53	1.216	10 10 43.3	6.56	23 53.2
24	1 49 3.52	1.128	8 50 40.6	6.62	1 40.4	24	2 3 45.71	1.216	10 13 20.8	6.55	23 49.7
25	1 49 30.67	1.134	8 53 19.6	6.63	1 36.9	25	2 4 14.89	1.216	10 15 57.8	6.53	23 46.3
26	1 49 57.93	1.139	8 55 59.0	6.65	1 33.5	26	2 4 44.07	1.216	10 18 34.2	6.51	23 42.8
27	1 50 25.33	1.144	8 58 38.6	6.66	1 30.0	27	2 5 13.25	1.216	10 21 10.3	6.49	23 39.4
28	1 50 52.84	1.149	9 1 18.5	6.67	1 26.5	28	2 5 42.43	1.215	10 23 45.9	6.47	23 35.9
29	1 51 20.47	1.154	9 3 58.6	6.68	1 23.0	29	2 6 11.59	1.215	10 26 20.9	6.45	23 32.5
30	1 51 48.22	1.158	9 6 39.0	6.69	1 19.6	30	2 6 40.74	1.214	10 28 55.5	6.43	23 29.0
31	1 52 16.08	1.163	9 9 19.6	6.69	1 16.1	31	2 7 9.85	1.212	10 31 29.5	6.41	23 25.6
32	1 52 44.03	+1.167	+9 12 0.3	+6.70	1 12.6	32	2 7 38.95	+1.211	+10 34 2.9	+6.38	23 22.1
Day of the Month.	1st.	11th.	21st.	31st.		Day of the Month.	1st.	11th.	21st.	31st.	
Polar Semidiameter	7".8	7".8	7".7	7".7		Polar Semidiameter	7".6	7".6	7".6	7".6	
Horizontal Parallax	0.9	0.9	0.9	0.9		Horizontal Parallax	0.9	0.9	0.9	0.9	

+ prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Hour. Min. Sec.	Sec.	Hour. Min. Sec.	Sec.			Hour. Min. Sec.	Sec.	Hour. Min. Sec.	Sec.	
1	2 7 9.85	+1.912	10 31 29.5	+6.41	23 25.6	1	2 21 39.55	+1.008	11 44 34.4	+5.96	21 38.1
2	2 7 38.95	1.911	10 34 2.9	6.38	23 22.1	2	2 22 5.82	1.002	11 46 40.1	5.91	21 34.6
3	2 8 8.01	1.910	10 36 35.7	6.35	23 18.7	3	2 22 31.93	1.005	11 48 44.6	5.16	21 31.1
4	2 8 37.03	1.908	10 39 7.8	6.33	23 15.2	4	2 22 57.89	1.078	11 50 47.7	5.11	21 27.6
5	2 9 6.02	1.906	10 41 39.4	6.30	23 11.8	5	2 23 23.67	1.071	11 52 49.8	5.06	21 24.1
6	2 9 34.96	1.904	10 44 10.2	6.27	23 8.3	6	2 23 49.29	1.064	11 54 50.5	5.01	21 20.6
7	2 10 3.85	1.902	10 46 40.3	6.24	23 4.9	7	2 24 14.73	1.057	11 56 50.1	4.95	21 17.0
8	2 10 32.70	1.900	10 49 9.6	6.21	23 1.4	8	2 24 40.00	1.049	11 58 48.4	4.90	21 13.5
9	2 11 1.49	1.898	10 51 38.3	6.18	22 58.0	9	2 25 5.09	1.042	12 0 45.3	4.84	21 10.0
10	2 11 30.21	1.896	10 54 6.3	6.15	22 54.5	10	2 25 29.99	1.034	12 2 41.0	4.79	21 6.5
11	2 11 58.88	1.893	10 56 33.4	6.12	22 51.1	11	2 25 54.70	1.026	12 4 35.4	4.74	21 3.0
12	2 12 27.48	1.891	10 58 59.9	6.09	22 47.6	12	2 26 19.21	1.018	12 6 28.5	4.68	20 59.4
13	2 12 56.01	1.888	11 1 25.5	6.05	22 44.1	13	2 26 43.53	1.009	12 8 20.2	4.62	20 55.9
14	2 13 24.47	1.884	11 3 50.3	6.02	22 40.7	14	2 27 7.65	1.001	12 10 10.6	4.57	20 52.4
15	2 13 52.84	1.881	11 6 14.1	5.98	22 37.2	15	2 27 31.56	0.993	12 11 59.6	4.51	20 48.8
16	2 14 21.14	1.878	11 8 37.2	5.94	22 33.7	16	2 27 55.28	0.984	12 13 47.2	4.46	20 45.3
17	2 14 49.36	1.874	11 10 59.4	5.91	22 30.3	17	2 28 18.77	0.974	12 15 33.5	4.40	20 41.7
18	2 15 17.40	1.870	11 13 20.7	5.87	22 26.8	18	2 28 42.05	0.966	12 17 18.3	4.34	20 38.2
19	2 15 45.52	1.866	11 15 41.1	5.83	22 23.3	19	2 29 5.12	0.956	12 19 1.8	4.28	20 34.6
20	2 16 13.45	1.862	11 18 0.5	5.79	22 19.9	20	2 29 27.96	0.947	12 20 43.8	4.22	20 31.1
21	2 16 41.28	1.858	11 20 19.0	5.75	22 16.4	21	2 29 50.57	0.937	12 22 24.4	4.16	20 27.5
22	2 17 9.02	1.853	11 22 36.5	5.71	22 12.9	22	2 30 12.94	0.927	12 24 3.5	4.10	20 24.0
23	2 17 36.64	1.848	11 24 53.1	5.67	22 9.5	23	2 30 35.07	0.917	12 25 41.1	4.03	20 20.4
24	2 18 4.15	1.843	11 27 8.7	5.63	22 6.0	24	2 30 56.96	0.907	12 27 17.3	3.97	20 16.8
25	2 18 31.54	1.838	11 29 23.2	5.58	22 2.5	25	2 31 18.61	0.896	12 28 51.9	3.91	20 13.3
26	2 18 58.80	1.833	11 31 36.7	5.54	21 59.0	26	2 31 39.99	0.886	12 30 24.9	3.84	20 9.7
27	2 19 25.94	1.828	11 33 49.1	5.50	21 55.5	27	2 32 1.13	0.875	12 31 56.4	3.78	20 6.1
28	2 19 52.04	1.823	11 36 0.5	5.45	21 52.0	28	2 32 22.00	0.864	12 33 26.4	3.71	20 2.5
29	2 20 19.81	1.818	11 38 10.7	5.40	21 48.5	29	2 32 42.61	0.853	12 34 54.7	3.64	19 58.9
30	2 20 46.54	1.810	11 40 19.7	5.35	21 45.1	30	2 33 2.95	0.841	12 36 21.5	3.58	19 55.3
31	2 21 13.12	1.804	11 42 27.7	5.31	21 41.6	31	2 33 23.02	0.830	12 37 46.7	3.51	19 51.7
32	2 21 39.55	+1.098	+11 44 34.4	+5.26	21 38.1	32	2 33 42.81	+0.818	+12 39 10.4	+3.45	19 48.1
Day of the Month.		1st.	11th.	21st.	31st.	Day of the Month.		1st.	11th.	21st.	31st.
Polar Semidiameter		7.6	7.6	7.7	7.7	Polar Semidiameter		7.8	7.8	7.9	8.0
Horizontal Parallax		0.9	0.9	0.9	0.9	Horizontal Parallax		0.9	0.9	0.9	0.9

Note.—North declinations are marked +, south declinations —

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	2 33 23.02	+0.830	+12 37 46.7	+3.51	19 51.7	1	2 41 10.08	+0.401	+13 7 44.0	+1.25	17 57.4
2	2 33 42.81	0.818	12 39 10.4	3.45	19 48.1	2	2 41 19.51	0.385	13 8 13.1	1.18	17 53.6
3	2 34 2.33	0.806	12 40 32.4	3.38	19 44.5	3	2 41 28.57	0.369	13 8 40.3	1.10	17 49.8
4	2 34 21.55	0.794	12 41 52.8	3.31	19 40.8	4	2 41 37.23	0.353	13 9 5.6	1.02	17 46.0
5	2 34 40.49	0.782	12 43 11.6	3.24	19 37.2	5	2 41 45.51	0.336	13 9 29.1	0.94	17 42.2
6	2 34 59.13	0.770	12 44 28.7	3.17	19 33.6	6	2 41 53.39	0.320	13 9 50.7	0.86	17 38.4
7	2 35 17.48	0.758	12 45 44.2	3.10	19 30.0	7	2 42 0.89	0.304	13 10 10.4	0.79	17 34.6
8	2 35 35.53	0.746	12 46 58.0	3.03	19 26.3	8	2 42 7.99	0.287	13 10 28.3	0.71	17 30.8
9	2 35 53.29	0.734	12 48 10.1	2.96	19 22.7	9	2 42 14.69	0.271	13 10 44.2	0.63	17 27.0
10	2 36 10.73	0.721	12 49 20.5	2.89	19 19.0	10	2 42 21.00	0.254	13 10 58.2	0.55	17 23.1
11	2 36 27.87	0.708	12 50 29.3	2.82	19 15.4	11	2 42 26.90	0.238	13 11 10.3	0.47	17 19.3
12	2 36 44.70	0.695	12 51 36.2	2.75	19 11.7	12	2 42 32.41	0.221	13 11 20.6	0.39	17 15.5
13	2 37 1.22	0.682	12 52 41.6	2.68	19 8.1	13	2 42 37.51	0.204	13 11 28.9	0.31	17 11.6
14	2 37 17.41	0.668	12 53 45.2	2.61	19 4.4	14	2 42 42.20	0.187	13 11 35.3	0.23	17 7.8
15	2 37 33.28	0.654	12 54 47.0	2.54	19 0.7	15	2 42 46.48	0.169	13 11 39.8	0.15	17 3.9
16	2 37 48.82	0.641	12 55 47.1	2.47	18 57.1	16	2 42 50.36	0.152	13 11 42.4	+0.07	17 0.0
17	2 38 4.04	0.627	12 56 45.5	2.40	18 53.4	17	2 42 53.82	0.133	13 11 43.1	-0.01	16 56.1
18	2 38 18.92	0.613	12 57 42.1	2.33	18 49.7	18	2 42 56.86	0.118	13 11 41.9	0.09	16 52.3
19	2 38 33.47	0.599	12 58 37.0	2.25	18 46.0	19	2 42 59.49	0.099	13 11 38.7	0.17	16 48.4
20	2 38 47.67	0.584	12 59 30.0	2.17	18 42.3	20	2 43 1.70	0.084	13 11 33.7	0.24	16 44.5
21	2 39 1.53	0.570	13 0 21.2	2.10	18 38.6	21	2 43 3.50	0.066	13 11 26.8	0.32	16 40.5
22	2 39 15.03	0.555	13 1 10.7	2.03	18 34.9	22	2 43 4.88	0.049	13 11 18.0	0.40	16 36.6
23	2 39 28.19	0.540	13 1 58.4	1.95	18 31.2	23	2 43 5.84	0.031	13 11 7.3	0.48	16 32.7
24	2 39 40.98	0.525	13 2 44.2	1.87	18 27.4	24	2 43 6.39	+0.014	13 10 54.7	0.56	16 28.8
25	2 39 53.42	0.510	13 3 28.2	1.80	18 23.7	25	2 43 6.52	-0.003	13 10 40.2	0.64	16 24.9
26	2 40 5.48	0.495	13 4 10.3	1.72	18 20.0	26	2 43 6.22	0.021	13 10 23.8	0.72	16 20.9
27	2 40 17.18	0.479	13 4 50.5	1.64	18 16.2	27	2 43 5.50	0.038	13 10 5.5	0.80	16 17.0
28	2 40 28.51	0.464	13 5 28.9	1.57	18 12.5	28	2 43 4.35	0.056	13 9 45.4	0.87	16 13.0
29	2 40 39.47	0.448	13 6 5.5	1.49	18 8.7	29	2 43 2.80	0.073	13 9 23.4	0.95	16 9.0
30	2 40 50.05	0.433	13 6 40.2	1.41	18 4.9	30	2 43 0.83	0.090	13 8 59.6	1.03	16 5.1
31	2 41 0.26	0.417	13 7 13.0	1.33	18 1.2	31	2 42 58.44	0.108	13 8 33.9	1.10	16 1.1
32	2 41 10.08	+0.401	+13 7 44.0	+1.25	17 57.4	32	2 42 55.64	-0.125	+13 8 6.5	-1.18	15 57.1
Day of the Month.	1st.	11th.	21st.	31st.		Day of the Month.	1st.	11th.	21st.	31st.	
Polar Semidiameter	8.0	8.2	8.3	8.5		Polar Semidiameter	8.5	8.6	8.8	8.9	
Horizontal Parallax	0.9	0.9	0.9	0.9		Horizontal Parallax	1.0	1.0	1.0	1.0	

+ prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
1	h m s 2 42 55.04	—0.195	+13 8 6.5	—1.18	h m 15 57.1	1	h m s 2 38 31.88	—0.583	+12 41 30.0	—3.11	h m 13 54.7
2	2 42 52.44	0.148	13 7 37.2	1.25	15 53.1	2	2 38 17.70	0.595	12 40 14.7	3.16	13 50.5
3	2 42 48.33	0.159	13 7 6.1	1.33	15 49.1	3	2 38 3.36	0.606	12 38 58.3	3.20	13 46.3
4	2 42 44.81	0.176	13 6 33.3	1.40	15 45.1	4	2 37 48.68	0.618	12 37 40.8	3.25	13 42.2
5	2 42 40.37	0.193	13 5 58.6	1.48	15 41.1	5	2 37 33.73	0.628	12 36 22.3	3.29	13 38.0
6	2 42 35.54	0.210	13 5 22.2	1.55	15 37.1	6	2 37 18.53	0.639	12 35 2.8	3.33	13 33.8
7	2 42 30.30	0.227	13 4 44.1	1.62	15 33.1	7	2 37 3.07	0.649	12 33 42.4	3.37	13 29.6
8	2 42 24.66	0.243	13 4 4.1	1.69	15 29.0	8	2 36 47.37	0.659	12 32 21.0	3.41	13 25.4
9	2 42 18.63	0.260	13 3 22.5	1.77	15 25.0	9	2 36 31.43	0.669	12 30 58.8	3.44	13 21.2
10	2 42 12.20	0.277	13 2 39.2	1.84	15 21.0	10	2 36 15.26	0.678	12 29 35.7	3.47	13 17.0
11	2 42 5.37	0.293	13 1 54.2	1.91	15 16.9	11	2 35 58.89	0.687	12 28 11.8	3.51	13 12.8
12	2 41 58.17	0.309	13 1 7.5	1.98	15 12.9	12	2 35 42.29	0.695	12 26 47.2	3.54	13 8.6
13	2 41 50.57	0.325	13 0 19.2	2.05	15 8.8	13	2 35 25.50	0.703	12 25 21.8	3.57	13 4.4
14	2 41 42.58	0.341	12 59 29.1	2.12	15 4.7	14	2 35 8.51	0.711	12 23 55.8	3.60	13 0.2
15	2 41 34.21	0.357	12 58 37.5	2.19	15 0.7	15	2 34 51.34	0.719	12 22 29.0	3.63	12 55.9
16	2 41 25.46	0.373	12 57 44.3	2.25	14 56.6	16	2 34 33.99	0.726	12 21 1.7	3.65	12 51.7
17	2 41 16.34	0.388	12 56 49.4	2.32	14 52.5	17	2 34 16.47	0.733	12 19 33.8	3.67	12 47.5
18	2 41 6.84	0.404	12 55 53.0	2.38	14 48.4	18	2 33 58.80	0.740	12 18 5.5	3.69	12 43.3
19	2 40 56.98	0.419	12 54 55.1	2.45	14 44.3	19	2 33 40.97	0.746	12 16 36.7	3.71	12 39.0
20	2 40 46.75	0.434	12 53 55.7	2.51	14 40.2	20	2 33 23.01	0.751	12 15 7.6	3.72	12 34.8
21	2 40 36.16	0.449	12 52 54.7	2.57	14 36.1	21	2 33 4.92	0.756	12 13 38.0	3.74	12 30.6
22	2 40 25.22	0.463	12 51 52.3	2.63	14 32.0	22	2 32 46.72	0.761	12 12 8.3	3.75	12 26.4
23	2 40 13.93	0.477	12 50 48.4	2.69	14 27.9	23	2 32 28.41	0.765	12 10 38.2	3.76	12 22.1
24	2 40 2.30	0.492	12 49 43.2	2.75	14 23.7	24	2 32 10.00	0.769	12 9 8.1	3.76	12 17.9
25	2 39 50.33	0.505	12 48 36.6	2.80	14 19.6	25	2 31 51.51	0.772	12 7 37.7	3.77	12 13.7
26	2 39 38.04	0.519	12 47 28.7	2.86	14 15.5	26	2 31 32.93	0.775	12 6 7.2	3.77	12 9.4
27	2 39 25.43	0.532	12 46 19.5	2.91	14 11.3	27	2 31 14.29	0.778	12 4 36.8	3.77	12 5.2
28	2 39 12.50	0.545	12 45 8.9	2.96	14 7.2	28	2 30 55.61	0.780	12 3 6.4	3.77	12 0.9
29	2 38 59.26	0.558	12 43 57.2	3.02	14 3.0	29	2 30 36.89	0.781	12 1 36.0	3.76	11 56.7
30	2 38 45.72	0.570	12 42 44.2	3.07	13 58.8	30	2 30 18.13	0.782	12 0 5.7	3.75	11 52.4
31	2 38 31.88	0.583	12 41 30.0	3.11	13 54.7	31	2 29 59.36	0.782	11 58 35.7	3.75	11 48.2
32	2 38 17.76	—0.595	+12 40 14.7	—3.16	13 50.5	32	2 29 40.58	—0.782	+11 57 5.8	—3.74	11 43.9
Day of the Month.		1st.	11th.	21st.	31st.	Day of the Month.		1st.	11th.	21st.	31st.
Polar Semidiameter		9".0	9".1	9".2	9".3	Polar Semidiameter		9".3	9".4	9".5	9".5
Horizontal Parallax		1.0	1.0	1.0	1.0	Horizontal Parallax		1.0	1.1	1.1	1.1

NOTE.—North declinations are marked +, south declinations —

GREENWICH MEAN TIME.

NOVEMBER.

DECEMBER.

Day of Month.	Apparent Right Ascension.			Var. of R. A. for 1 Hour.		Apparent Declination.			Var. of Dec. for 1 Hour.		Meridian Passage.																				
	Noon.			Noon.		Noon.			Noon.																						
	h	m	s	s	o	"	"	h	m																						
1	2	29	40.58	-0.782	+11	57	5.8	-3.74	11	43.9	1	2	21	2.66	-0.594	+11	18	1.3	-2.47	9	37.5										
2	2	29	21.80	0.782	11	55	36.2	3.73	11	39.7	2	2	20	48.53	0.582	11	17	2.9	2.40	9	33.3										
3	2	29	3.03	0.781	11	54	7.0	3.71	11	35.5	3	2	20	34.70	0.570	11	16	6.0	2.33	9	29.1										
4	2	28	44.28	0.780	11	52	38.1	3.69	11	31.2	4	2	20	21.16	0.558	11	15	10.9	2.26	9	25.0										
5	2	28	25.26	0.779	11	51	9.6	3.67	11	27.0	5	2	20	7.94	0.545	11	14	17.5	2.19	9	20.8										
6	2	28	6.88	0.777	11	49	41.6	3.65	11	22.7	6	2	19	55.03	0.531	11	13	26.0	2.11	9	16.7										
7	2	27	48.26	0.775	11	48	4.2	3.63	11	18.5	7	2	19	42.44	0.518	11	12	36.3	2.03	9	12.5										
8	2	27	29.69	0.772	11	46	47.3	3.61	11	14.3	8	2	19	30.18	0.504	11	11	48.5	1.95	9	8.4										
9	2	27	11.20	0.769	11	45	21.0	3.58	11	10.0	9	2	19	18.25	0.490	11	11	2.6	1.87	9	4.3										
10	2	26	52.79	0.765	11	43	55.3	3.56	11	5.8	10	2	19	6.65	0.476	11	10	18.6	1.79	9	0.1										
11	2	26	34.47	0.761	11	42	30.5	3.52	11	1.6	11	2	18	55.41	0.461	11	9	36.6	1.71	8	56.0										
12	2	26	16.25	0.757	11	41	6.3	3.49	10	57.3	12	2	18	44.51	0.446	11	8	56.6	1.63	8	51.9										
13	2	25	58.14	0.753	11	39	43.0	3.45	10	53.1	13	2	18	33.98	0.431	11	8	18.6	1.54	8	47.8										
14	2	25	40.15	0.747	11	38	20.6	3.42	10	48.9	14	2	18	23.80	0.416	11	7	42.5	1.46	8	43.7										
15	2	25	22.29	0.741	11	36	59.1	3.38	10	44.6	15	2	18	13.99	0.401	11	7	8.6	1.37	8	39.6										
16	2	25	4.57	0.735	11	35	38.6	3.33	10	40.4	16	2	18	4.55	0.385	11	6	36.8	1.29	8	35.6										
17	2	24	47.01	0.728	11	34	19.2	3.29	10	36.2	17	2	17	55.50	0.369	11	6	6.9	1.20	8	31.5										
18	2	24	29.61	0.721	11	33	0.7	3.24	10	32.0	18	2	17	46.82	0.353	11	5	39.3	1.11	8	27.4										
19	2	24	12.38	0.714	11	31	43.5	3.19	10	27.8	19	2	17	38.54	0.336	11	5	13.7	1.02	8	23.3										
20	2	23	55.34	0.706	11	30	27.4	3.14	10	23.5	20	2	17	30.65	0.320	11	4	50.3	0.93	8	19.3										
21	2	23	38.49	0.698	11	29	12.5	3.09	10	19.3	21	2	17	23.15	0.303	11	4	29.2	0.84	8	15.2										
22	2	23	21.85	0.689	11	27	58.9	3.03	10	15.1	22	2	17	16.06	0.286	11	4	10.1	0.75	8	11.2										
23	2	23	5.41	0.680	11	26	46.7	2.98	10	10.9	23	2	17	9.37	0.270	11	3	53.3	0.65	8	7.1										
24	2	22	49.19	0.671	11	25	35.9	2.92	10	6.7	24	2	17	3.08	0.253	11	3	38.7	0.56	8	3.1										
25	2	22	33.31	0.661	11	24	26.4	2.86	10	2.5	25	2	16	57.21	0.236	11	3	26.5	0.47	7	59.1										
26	2	22	17.47	0.651	11	23	18.4	2.80	9	58.3	26	2	16	51.57	0.219	11	3	16.4	0.37	7	55.0										
27	2	22	1.98	0.640	11	22	11.8	2.74	9	54.2	27	2	16	46.71	0.201	11	3	8.5	0.28	7	51.0										
28	2	21	46.74	0.629	11	21	6.7	2.67	9	50.0	28	2	16	42.09	0.184	11	3	2.9	0.18	7	47.0										
29	2	21	31.77	0.618	11	20	3.3	2.61	9	45.8	29	2	16	37.89	0.166	11	2	59.6	-0.09	7	43.0										
30	2	21	17.07	0.606	11	19	1.5	2.54	9	41.6	30	2	16	34.12	0.149	11	2	58.6	0.00	7	39.0										
31	2	21	2.66	0.594	11	18	1.3	2.47	9	37.5	31	2	16	30.76	0.131	11	2	59.7	+0.09	7	35.1										
32	2	20	48.53	-0.582	+11	17	2.9	-2.40	9	33.3	32	2	16	27.83	-0.114	+11	3	3.1	+0.18	7	31.1										
Day of the Month.												1st.	11th.	21st.	31st.	Day of the Month.												1st.	11th.	21st.	31st.
Polar Semidiameter												9.5	9.5	9.4	9.3	Polar Semidiameter												9.3	9.2	9.1	8.9
Horizontal Parallax												1.1	1.1	1.1	1.1	Horizontal Parallax												1.1	1.0	1.0	1.0

+ prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing; - indicates that north declinations are decreasing and south declinations increasing.

242 MOON'S LONGITUDE, &c., 1881.

FOR GREENWICH MEAN NOON AND MIDNIGHT.						
Day of Month.	JANUARY.		FEBRUARY.		MARCH.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	294° 21' 19.8	+ 2° 24' 11.0	346° 54' 1.1	+ 5° 4' 22.1	354° 49' 30.2	+ 5° 1' 13.4
1.5	301 56 11.0	3 0 11.6	354 2 34.3	5 8 15.6	1 56 40.5	4 58 19.7
2.0	309 27 50.8	3 32 47.4	1 4 6.5	5 7 24.4	8 57 56.5	4 50 55.6
2.5	316 55 14.7	4 1 25.6	7 58 21.9	5 2 3.4	15 52 49.9	4 39 19.5
3.0	324 17 27.7	4 25 41.5	14 45 16.2	4 52 31.5	22 41 3.3	4 23 53.9
3.5	331 33 45.2	4 45 18.7	21 24 55.8	4 39 9.6	29 22 30.1	4 5 3.1
4.0	338 43 34.3	5 0 8.8	27 57 36.2	4 22 20.3	35 57 14.0	3 43 12.4
4.5	345 46 33.5	5 10 10.5	34 23 40.6	4 2 26.7	42 25 27.7	3 18 47.9
5.0	352 42 32.6	5 15 28.6	40 43 38.2	3 39 51.7	48 47 31.7	2 52 14.9
5.5	359 31 31.7	5 16 12.3	46 58 2.7	3 14 57.6	55 3 53.1	2 23 58.0
6.0	6 13 39.4	5 12 34.7	53 7 31.0	2 48 6.2	61 15 4.4	1 54 20.4
6.5	12 49 12.0	5 4 51.4	59 12 42.0	2 19 38.3	67 21 42.0	1 23 44.0
7.0	19 18 31.5	4 53 19.8	65 14 15.8	1 49 53.7	73 24 25.0	0 52 29.4
7.5	25 42 4.4	4 38 18.4	71 12 52.3	1 19 11.7	79 23 54.5	+ 0 20 56.1
8.0	32 0 20.2	4 20 6.4	77 9 10.7	0 47 50.9	85 20 53.1	- 0 10 37.6
8.5	38 13 50.3	3 59 2.8	83 3 49.4	+ 0 16 9.4	91 16 2.7	0 41 54.2
9.0	44 23 7.5	3 35 27.0	88 57 24.6	- 0 15 35.0	97 10 4.7	1 12 36.9
9.5	50 28 44.4	3 9 38.3	94 50 30.3	0 47 4.5	103 3 39.6	1 42 29.2
10.0	56 31 13.5	2 41 55.6	100 43 38.0	1 18 1.5	108 57 26.2	2 11 14.8
10.5	62 31 6.1	2 12 38.0	106 37 16.3	1 48 8.2	114 52 0.6	2 38 37.7
11.0	68 28 52.4	1 42 4.4	112 31 50.9	2 17 7.1	120 47 56.4	3 4 21.7
11.5	74 25 0.8	1 10 33.7	118 27 44.4	2 44 40.4	126 45 44.0	3 28 10.8
12.0	80 19 56.9	0 38 25.0	124 25 16.3	3 10 30.4	132 45 50.1	3 49 48.9
12.5	86 14 6.1	+ 0 5 57.3	130 24 42.9	3 34 19.9	138 48 37.9	4 9 0.0
13.0	92 7 49.9	- 0 26 30.1	136 26 17.7	3 55 51.9	144 54 26.2	4 25 28.7
13.5	98 1 28.6	0 58 38.2	142 30 11.6	4 14 50.1	151 3 29.7	4 39 0.1
14.0	103 55 20.7	1 30 7.7	148 36 32.7	4 30 59.4	157 15 58.9	4 49 20.4
14.5	109 49 42.9	2 0 39.7	154 45 27.1	4 44 5.7	163 31 59.9	4 56 16.9
15.0	115 44 50.4	2 29 55.5	160 56 59.2	4 53 56.4	169 51 34.8	4 59 38.8
15.5	121 40 57.4	2 57 36.7	167 11 12.3	5 0 20.5	176 14 41.8	4 59 17.8
16.0	127 38 17.0	3 23 25.5	173 28 8.8	5 3 9.5	182 41 15.9	4 55 8.1
16.5	133 37 2.1	3 47 5.0	179 47 51.3	5 2 16.8	189 11 9.6	4 47 6.6
17.0	139 37 25.3	4 8 18.9	186 10 22.5	4 57 38.2	195 44 13.7	4 35 14.1
17.5	145 39 39.3	4 26 52.0	192 35 46.1	4 49 12.2	202 20 17.6	4 19 34.8
18.0	151 43 57.3	4 42 30.4	199 4 6.8	4 36 59.9	208 59 10.6	4 0 16.5
18.5	157 50 33.4	4 55 1.2	205 35 30.8	4 21 5.5	215 40 42.5	3 37 30.9
19.0	163 59 42.6	5 4 12.9	212 10 5.8	4 1 35.7	222 24 44.6	3 11 33.2
19.5	170 11 40.9	5 9 55.4	218 48 0.8	3 38 40.6	229 11 9.5	2 42 42.3
20.0	176 26 45.5	5 12 0.3	225 29 25.8	3 12 33.1	235 59 51.8	2 11 20.3
20.5	182 45 15.1	5 10 20.5	232 14 31.8	2 43 29.3	242 50 47.9	1 37 52.3
21.0	189 7 29.0	5 4 50.7	239 3 29.4	2 11 48.9	249 43 56.0	: 2 46.1
21.5	195 33 47.3	4 55 28.2	245 56 28.3	1 37 54.8	256 22 15.4	- 0 26 31.6
22.0	202 4 30.8	4 42 11.5	252 53 36.4	1 2 13.3	263 36 46.5	+ 0 10 19.2
22.5	208 39 59.9	4 25 2.5	259 54 58.1	- 0 25 14.2	270 36 28.9	0 47 12.8
23.0	215 20 33.8	4 4 5.7	267 0 33.3	+ 0 12 29.4	277 38 21.5	1 23 34.7
23.5	222 6 30.1	3 39 28.7	274 10 15.8	0 50 21.4	284 42 20.7	1 58 50.1
24.0	228 58 3.2	3 11 23.5	281 23 52.3	1 27 43.3	291 48 19.7	2 32 24.1
24.5	235 55 23.2	2 40 6.1	288 41 0.9	2 3 55.3	299 56 7.5	3 3 42.7
25.0	242 58 34.2	2 5 57.5	296 1 10.9	2 38 16.7	306 5 28.2	3 32 13.6
25.5	250 7 33.2	1 29 24.2	303 23 42.5	3 10 7.7	313 16 0.0	3 57 26.9
26.0	257 22 8.3	0 50 57.7	310 47 47.8	3 38 50.9	320 27 15.5	4 18 55.9
26.5	264 41 57.9	- 0 11 14.9	318 12 31.2	4 3 52.8	327 38 41.9	4 36 18.2
27.0	272 6 29.8	+ 0 29 2.3	325 36 52.1	4 24 45.1	334 49 41.3	4 49 16.6
27.5	279 35 1.5	1 9 8.7	332 59 46.7	4 41 5.9	341 59 32.4	4 57 39.3
28.0	287 6 39.6	1 48 16.7	340 20 11.1	4 52 40.8	349 7 31.5	5 1 20.6
28.5	294 40 22.3	2 25 38.4	347 37 4.3	4 59 23.0	356 12 54.6	5 0 21.2
29.0	302 15 0.1	3 0 27.7	354 49 30.2	5 1 13.4	3 14 59.2	4 54 47.6
29.5	309 49 19.1	3 32 2.1	1 56 40.5	4 58 19.7	10 13 6.2	4 44 52.0
30.0	317 22 3.6	3 59 44.9	8 57 56.5	4 50 55.6	17 6 41.6	4 30 51.4
30.5	324 51 59.6	4 23 7.1	15 52 49.9	4 39 19.5	23 55 17.6	4 13 6.7
31.0	332 17 57.5	4 41 47.6	22 41 3.3	4 23 53.9	30 38 33.8	3 52 1.9
31.5	339 38 55.4	+ 4 55 33.9	29 22 30.1	+ 4 5 3.1	37 16 18.0	+ 3 28 2.7

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	APRIL.		MAY.		JUNE.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	43° 48' 25.6"	+ 3° 1' 36.1"	76° 58' 57.3"	+ 0° 8' 41.4"	121° 3' 16.4"	- 3° 36' 13.3"
1.5	50 15 0.2	2 33 8.6	83 4 19.7	- 0 24 31.0	126 57 55.5	3 59 0.1
2.0	56 36 12.4	2 3 6.9	89 6 41.1	0 57 12.3	132 52 55.3	4 19 15.1
2.5	62 52 19.4	1 31 56.4	95 6 28.1	1 29 3.1	138 48 46.9	4 36 46.7
3.0	69 3 44.4	1 0 1.0	101 4 10.2	1 59 45.6	144 46 2.5	4 51 23.8
3.5	75 10 55.3	+ 0 27 43.3	107 0 19.4	2 29 3.2	150 45 15.4	5 2 55.9
4.0	81 14 24.2	- 0 4 35.9	112 55 29.7	2 56 40.4	156 46 59.3	5 11 13.2
4.5	87 14 46.4	0 36 37.0	118 50 16.8	3 22 22.7	162 51 48.4	5 16 6.5
5.0	93 12 39.6	1 8 1.8	124 45 17.7	3 45 56.3	169 0 16.2	5 17 27.3
5.5	99 8 43.4	1 38 33.3	130 41 9.8	4 7 8.0	175 12 55.2	5 15 7.8
6.0	105 3 38.2	2 7 55.4	136 38 30.7	4 25 44.9	181 30 16.3	5 9 1.4
6.5	111 58 5.0	2 35 52.7	142 37 57.8	4 41 34.5	187 52 48.0	4 59 3.1
7.0	116 52 44.1	3 2 10.3	148 40 7.2	4 54 24.5	194 20 55.1	4 45 10.0
7.5	122 48 15.3	3 26 33.4	154 45 33.5	5 4 3.1	200 54 58.7	4 27 21.5
8.0	128 45 16.7	3 48 47.7	160 54 49.0	5 10 18.6	207 35 14.3	4 5 40.5
8.5	134 44 24.5	4 8 38.7	167 8 23.0	5 13 0.3	214 21 51.0	3 40 13.9
9.0	140 46 12.2	4 25 52.1	173 26 41.4	5 11 58.6	221 14 50.7	3 11 13.4
9.5	146 51 9.9	4 40 13.9	179 50 5.6	5 7 5.2	228 14 7.4	2 38 56.1
10.0	152 59 44.3	4 51 30.2	186 18 51.8	4 58 13.7	235 19 26.0	2 3 44.8
10.5	159 12 17.8	4 59 28.0	192 53 10.6	4 45 20.6	242 30 22.5	1 26 8.6
11.0	165 29 7.9	5 3 55.3	199 33 6.1	4 28 25.6	249 46 24.1	0 46 42.4
11.5	171 50 27.0	5 4 41.3	206 18 35.6	4 7 32.7	257 6 49.3	- 0 6 6.3
12.0	178 16 22.0	5 1 37.3	213 9 29.2	3 42 50.5	264 30 49.4	+ 0 34 55.6
12.5	184 46 54.4	4 54 37.3	220 5 20.9	3 14 32.9	272 57 29.6	1 15 36.1
13.0	191 21 59.8	4 43 38.3	227 6 14.0	2 42 59.6	279 25 50.8	1 55 7.4
13.5	198 1 28.6	4 28 41.2	234 11 12.0	2 8 35.6	286 54 51.6	2 32 42.8
14.0	204 45 6.3	4 9 50.8	241 19 49.1	1 31 51.4	294 23 30.2	3 7 38.4
14.5	211 32 34.3	3 47 16.9	248 31 26.6	0 53 22.5	301 50 47.3	3 39 15.3
15.0	218 23 30.7	3 21 13.7	255 45 23.2	- 0 13 47.9	309 15 47.4	4 7 0.3
15.5	225 17 31.5	2 52 0.4	263 0 56.7	+ 0 26 10.5	316 37 40.8	4 30 27.3
16.0	232 14 11.5	2 20 0.5	270 17 24.8	1 5 49.6	323 55 44.8	4 49 17.6
16.5	239 13 5.6	1 45 41.8	277 34 6.6	1 44 26.8	331 9 24.9	5 3 19.6
17.0	246 13 49.4	1 9 35.5	284 50 23.6	2 21 20.8	338 18 14.5	5 12 28.7
17.5	253 16 0.3	- 0 32 15.4	292 5 40.8	2 55 53.3	345 21 55.6	5 16 46.9
18.0	260 19 17.6	+ 0 5 42.6	299 19 26.4	3 27 29.5	352 20 17.9	5 16 18.7
18.5	267 23 23.0	0 43 41.6	306 31 13.2	3 55 40.0	359 13 17.6	5 11 17.5
19.0	274 28 0.5	1 21 4.6	313 40 38.1	4 19 59.8	6 0 57.1	5 1 57.4
19.5	281 32 56.1	1 57 15.3	320 47 21.8	4 40 9.6	12 43 23.8	4 48 35.7
20.0	288 37 57.5	2 31 38.7	327 51 9.1	4 55 55.3	19 20 49.1	4 31 31.9
20.5	295 42 53.2	3 3 41.8	333 51 48.0	5 7 8.3	25 53 27.0	4 11 6.9
21.0	302 47 32.7	3 32 54.4	341 49 9.4	5 13 44.6	32 21 34.0	3 47 42.8
21.5	309 51 44.9	3 58 49.4	348 43 6.8	5 15 44.9	38 45 28.0	3 21 42.4
22.0	316 55 18.2	4 21 3.4	355 33 35.5	5 13 14.4	45 5 27.3	2 53 28.9
22.5	323 57 59.6	4 39 17.0	2 20 32.6	5 6 21.8	51 21 50.8	2 23 25.5
23.0	330 59 34.8	4 53 14.9	9 3 56.5	4 55 19.5	57 34 56.9	1 51 55.6
23.5	337 59 47.5	5 2 46.5	15 43 46.5	4 40 22.5	63 45 3.5	1 19 22.5
24.0	344 58 19.6	5 7 45.9	22 20 2.6	4 21 48.6	69 52 27.9	0 46 9.2
24.5	351 54 51.8	5 8 12.1	28 52 45.8	3 59 58.2	75 57 26.8	+ 0 12 38.3
25.0	358 49 3.7	5 4 8.8	35 21 57.8	3 35 12.8	82 0 16.0	- 0 20 48.4
25.5	5 40 33.8	4 55 44.0	41 47 41.0	3 7 55.9	88 1 10.7	0 53 49.5
26.0	12 29 1.8	4 43 10.6	48 9 58.5	2 38 31.4	94 0 25.7	1 26 4.5
26.5	19 14 7.7	4 26 44.8	54 28 54.7	2 7 24.4	99 58 15.8	1 57 13.9
27.0	25 55 33.8	4 6 46.5	60 44 35.3	1 34 59.7	105 54 55.8	2 26 59.3
27.5	32 33 5.1	3 43 38.1	66 57 7.2	1 1 42.2	111 50 40.7	2 55 3.4
28.0	39 6 30.0	3 17 44.1	73 6 39.1	+ 0 27 56.4	117 45 46.5	3 21 10.1
28.5	45 35 40.8	2 49 30.4	79 13 21.5	- 0 5 54.3	123 40 30.1	3 45 4.6
29.0	52 0 34.5	2 19 23.4	85 17 27.0	0 39 27.3	129 35 9.2	4 6 33.3
29.5	58 21 12.5	1 47 49.5	91 19 10.1	1 12 21.3	135 30 3.0	4 25 23.9
30.0	64 37 40.9	1 15 14.7	97 18 47.7	1 44 16.2	141 25 32.3	4 41 25.1
30.5	70 50 10.8	0 42 4.1	103 16 38.7	2 14 53.4	147 21 59.4	4 54 26.9
31.0	76 58 57.3	+ 0 8 41.4	109 13 4.5	2 43 55.7	153 19 48.3	5 4 20.5
31.5	83 4 19.7	- 0 24 31.0	115 8 28.6	- 3 11 7.3	159 19 24.6	- 5 10 57.9

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FOR GREENWICH MEAN NOON AND MIDNIGHT.						
Day of Month.	JULY.		AUGUST.		SEPTEMBER.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	153° 19' 48.3	-5° 4' 20.5	199° 6' 55.0	-4° 19' 7.8	248° 4' 38.2	-0° 31' 19.8
1.5	159 19 24.6	5 10 57.9	205 28 41.0	3 59 24.7	254 53 27.9	+0 4 40.6
2.0	165 21 15.6	5 14 12.0	211 52 53.1	3 36 28.2	261 47 43.3	0 41 5.2
2.5	171 25 49.9	5 13 57.2	218 21 58.1	3 10 27.7	268 47 33.8	1 17 21.1
3.0	177 33 37.1	5 10 8.3	224 56 22.3	2 41 35.2	275 53 2.4	1 52 53.3
3.5	183 45 7.6	5 2 41.7	231 36 30.3	2 10 6.3	283 4 3.6	2 27 4.4
4.0	190 0 52.1	4 51 35.0	238 22 43.4	1 36 19.9	290 20 22.6	2 59 15.9
4.5	196 21 21.0	4 36 47.5	245 15 18.5	1 0 39.2	297 41 33.1	3 28 48.8
5.0	202 47 3.5	4 18 20.5	252 14 26.6	-0 23 31.6	305 6 57.8	3 55 5.6
5.5	209 18 26.5	3 56 17.9	259 20 10.8	+0 14 31.2	312 35 48.1	4 17 31.6
6.0	215 55 54.4	3 30 46.6	266 32 24.8	0 52 52.7	320 7 4.4	4 35 36.3
6.5	222 39 47.1	3 1 57.3	273 50 51.5	1 30 52.7	327 39 39.0	4 48 55.3
7.0	229 30 19.1	2 30 4.8	281 15 1.4	2 7 48.1	335 12 18.1	4 57 11.8
7.5	236 27 37.7	1 55 29.1	288 44 12.9	2 42 54.1	342 43 44.5	5 0 17.3
8.0	243 31 42.2	1 18 35.2	296 17 32.0	3 15 25.6	350 12 42.4	4 58 11.8
8.5	250 42 22.2	0 39 54.2	303 53 53.4	3 44 39.9	357 37 59.6	4 51 4.1
9.0	257 59 16.6	-0 0 2.5	311 32 2.6	4 9 58.4	4 58 31.4	4 39 10.4
9.5	265 21 53.3	+0 40 18.6	319 10 38.4	4 30 48.2	12 13 23.1	4 22 53.5
10.0	272 49 28.9	1 20 23.4	326 48 17.1	4 46 44.6	19 21 51.9	4 2 40.8
10.5	280 21 9.2	1 59 24.0	334 23 35.9	4 57 31.7	26 23 27.6	3 39 3.2
11.0	287 55 50.6	2 36 31.8	341 55 16.5	5 3 2.9	33 17 52.5	3 12 33.3
11.5	295 32 22.4	3 10 59.6	349 22 9.0	5 3 20.8	40 5 1.5	2 43 43.8
12.0	303 9 28.5	3 42 4.3	356 43 14.2	4 58 35.9	46 45 0.4	2 13 6.7
12.5	310 45 51.2	4 9 8.3	3 57 45.7	4 49 5.6	53 18 4.3	1 41 12.6
13.0	318 20 14.4	4 31 41.4	11 5 11.2	4 35 13.0	59 44 36.5	1 8 29.9
13.5	325 51 26.4	4 49 21.9	18 5 11.7	4 17 24.5	66 5 6.3	0 35 24.9
14.0	333 18 23.1	5 1 57.0	24 57 41.1	3 56 8.8	72 20 7.7	+0 2 21.4
14.5	340 40 10.1	5 9 22.4	31 42 44.7	3 31 55.4	78 36 18.0	-0 30 18.9
15.0	347 56 4.3	5 11 42.5	38 20 37.5	3 5 13.6	84 36 16.4	1 2 16.2
15.5	355 5 34.5	5 9 6.7	44 51 42.5	2 36 31.9	90 38 43.4	1 53 12.6
16.0	2 8 21.7	5 1 51.3	51 16 28.7	2 6 17.7	96 38 18.6	2 2 51.6
16.5	9 4 17.8	4 50 16.1	57 35 29.3	1 34 56.6	102 35 42.5	2 30 58.0
17.0	15 53 24.7	4 34 43.6	63 49 20.3	1 2 52.5	108 31 33.6	2 57 17.7
17.5	22 35 53.0	4 15 38.4	69 58 39.4	+0 30 27.8	114 26 28.4	3 21 37.1
18.0	29 11 59.9	3 53 25.6	76 4 4.7	-0 1 56.6	120 21 1.4	3 43 43.7
18.5	35 42 8.1	3 28 30.5	82 6 14.2	0 34 0.9	126 15 44.4	4 3 25.2
19.0	42 6 44.0	3 1 18.3	88 5 44.7	1 5 26.7	132 11 6.4	4 20 30.3
19.5	48 26 16.6	2 32 13.6	94 3 11.2	1 35 56.5	138 7 33.0	4 34 48.1
20.0	54 41 16.2	2 1 40.3	99 59 7.0	2 5 13.6	144 5 26.6	4 46 8.5
20.5	60 52 14.2	1 30 1.3	105 54 2.4	2 33 2.1	150 5 6.3	4 54 22.3
21.0	66 59 41.1	0 57 38.8	111 48 25.1	2 59 6.7	156 6 47.8	4 59 21.6
21.5	73 4 6.7	+0 24 54.4	117 42 40.3	3 23 12.7	162 10 43.8	5 0 59.8
22.0	79 5 59.6	-0 7 51.3	123 37 10.2	3 45 6.3	168 17 3.3	4 59 11.8
22.5	85 5 46.5	0 40 18.3	129 32 14.0	4 4 34.2	174 25 53.3	4 53 54.7
23.0	91 3 52.1	1 12 7.2	135 28 8.5	4 21 24.1	180 37 18.1	4 45 7.7
23.5	97 0 39.1	1 42 59.4	141 25 7.8	4 35 24.8	186 51 20.3	4 32 52.2
24.0	102 56 28.0	2 12 36.9	147 23 23.9	4 46 26.1	193 8 1.2	4 17 12.5
24.5	108 51 37.5	2 40 42.6	153 23 7.0	4 54 19.4	199 27 21.2	3 58 15.5
25.0	114 46 24.6	3 7 0.2	159 24 26.1	4 58 57.5	205 49 21.0	3 36 10.8
25.5	120 41 4.7	3 31 14.2	165 27 29.2	5 0 14.8	212 14 1.7	3 11 10.9
26.0	126 35 52.1	3 53 10.3	171 32 23.7	4 58 7.6	218 41 25.6	2 43 31.1
26.5	132 31 0.2	4 12 35.3	177 39 17.5	4 52 34.1	225 11 36.3	2 13 29.4
27.0	138 26 42.1	4 29 17.2	183 48 19.0	4 43 34.6	231 44 39.1	1 41 26.3
27.5	144 23 10.4	4 43 5.2	189 59 37.6	4 31 11.3	238 20 40.7	1 7 44.6
28.0	150 20 38.7	4 53 49.9	196 13 24.3	4 15 28.7	244 59 49.6	-0 32 49.3
28.5	156 19 20.8	5 1 23.5	202 29 52.3	3 56 33.4	251 42 15.4	+0 2 52.3
29.0	162 19 31.6	5 5 39.5	208 49 16.4	3 34 34.0	258 28 7.8	0 38 51.4
29.5	168 21 27.4	5 6 32.8	215 11 53.3	3 9 41.6	265 17 36.7	1 14 37.3
30.0	174 25 26.2	5 3 59.9	221 38 1.8	2 42 9.6	272 10 50.5	1 49 38.3
30.5	180 31 47.8	4 57 58.6	228 8 1.8	2 12 13.8	279 7 55.0	2 23 21.6
31.0	186 40 54.0	4 48 28.5	234 42 14.1	1 40 12.4	286 8 52.7	2 55 13.8
31.5	192 53 8.1	-4 35 30.6	241 20 59.6	-1 6 26.4	293 13 41.2	+3 24 41.8

MOON'S LONGITUDE, &c., 1881. 245

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	OCTOBER.		NOVEMBER.		DECEMBER.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	286° 8 52.7	+ 2 55 13.8	339° 40 14.8	+ 5 12 38.2	18° 9 6.5	+ 4 6 30.1
1.5	293 13 41.2	3 24 41.8	346 47 53.7	5 10 2.5	24 56 44.0	3 41 8.4
2.0	300 22 12.2	3 51 13.3	353 54 50.6	5 2 40.4	31 41 16.3	3 12 52.8
2.5	307 34 10.4	4 14 17.4	1 0 35.2	4 50 40.7	38 22 39.7	2 42 11.2
3.0	314 49 12.8	4 33 26.1	8 4 35.6	4 34 17.6	45 0 48.9	2 9 32.2
3.5	322 6 48.1	4 48 15.0	15 6 19.6	4 13 50.3	51 35 39.4	1 35 25.4
4.0	329 26 17.3	4 58 24.7	22 5 15.5	3 49 42.3	58 7 7.8	1 0 30.8
4.5	336 46 54.6	5 3 41.3	29 0 54.3	3 22 21.1	64 35 11.5	+ 0 24 47.6
5.0	344 7 47.5	5 3 57.6	35 52 48.5	2 52 16.6	70 59 49.5	- 0 10 45.4
5.5	351 28 0.6	4 59 13.6	42 40 35.1	2 20 0.9	77 21 2.4	0 45 51.2
6.0	358 46 35.8	4 49 36.6	49 23 55.7	1 46 6.8	83 38 52.8	1 20 4.2
6.5	6 2 35.7	4 35 20.7	56 2 36.8	1 11 7.0	89 53 25.4	1 53 0.9
7.0	13 15 6.2	4 16 46.6	62 36 30.8	+ 0 35 33.3	96 4 47.4	2 24 20.0
7.5	20 23 18.6	3 54 20.1	69 5 35.5	- 0 0 4.0	102 13 8.9	2 53 42.6
8.0	27 26 31.2	3 28 31.2	75 29 54.2	0 35 16.9	108 18 42.3	3 20 52.1
8.5	34 24 10.8	2 59 52.5	81 49 35.8	1 9 39.7	114 21 43.2	3 45 34.0
9.0	41 15 53.8	2 29 57.9	88 4 54.0	1 42 49.3	120 22 29.9	4 7 36.2
9.5	48 1 26.3	1 56 21.3	94 16 7.4	2 14 25.4	126 21 23.6	4 26 48.4
10.0	54 40 43.7	1 22 36.1	100 23 38.4	2 44 10.1	132 18 48.0	4 43 2.1
10.5	61 13 50.3	0 48 13.0	106 27 53.0	3 11 47.8	138 15 9.1	4 56 10.2
11.0	67 40 58.4	+ 0 13 41.0	112 29 20.3	3 37 5.0	144 10 55.2	5 6 6.7
11.5	74 2 27.2	- 0 20 33.3	118 28 31.8	3 59 49.9	150 6 36.8	5 12 47.0
12.0	80 18 41.7	0 54 6.3	124 26 1.1	4 19 52.4	156 2 46.1	5 16 7.5
12.5	86 30 11.5	1 26 36.9	130 22 22.9	4 37 3.6	161 59 56.8	5 16 5.1
13.0	92 37 29.9	1 57 46.4	136 18 13.1	4 51 15.4	167 58 43.5	5 12 37.6
13.5	98 41 12.8	2 27 18.2	142 14 8.1	5 2 20.8	173 59 41.8	5 5 43.8
14.0	104 41 57.7	2 54 57.6	148 10 44.5	5 10 13.2	180 3 27.0	4 55 23.4
14.5	110 40 23.4	3 20 31.2	154 8 38.0	5 14 46.9	186 10 34.3	4 41 36.6
15.0	116 37 8.9	3 43 46.9	160 8 23.7	5 15 56.9	192 21 38.0	4 24 26.0
15.5	122 32 52.9	4 4 33.8	166 10 35.0	5 13 38.5	198 37 10.2	4 3 54.9
16.0	128 28 13.5	4 22 41.6	172 15 43.3	5 7 48.3	204 57 40.8	3 40 9.6
16.5	134 23 47.2	4 38 0.7	178 24 17.4	4 58 24.2	211 23 36.1	3 13 18.6
17.0	140 20 8.6	4 50 22.2	184 36 43.3	4 45 25.3	217 55 17.8	2 43 33.8
17.5	146 17 50.1	4 59 37.5	190 53 23.0	4 28 53.1	224 33 2.3	2 11 10.9
18.0	152 17 21.3	5 5 38.8	197 14 34.4	4 8 51.3	231 16 59.5	1 36 29.8
18.5	158 19 8.9	5 8 19.3	203 40 31.0	3 45 26.4	238 7 11.9	0 59 55.0
19.0	164 23 36.3	5 7 33.2	210 11 20.9	3 18 48.7	245 3 33.5	- 0 21 55.7
19.5	170 31 3.0	5 3 16.0	216 47 7.1	2 49 12.0	252 5 49.5	+ 0 16 54.4
20.0	176 41 44.6	4 55 24.7	223 27 46.6	2 16 54.4	259 13 36.2	0 55 57.4
20.5	182 55 53.1	4 43 58.6	230 13 11.0	1 42 18.4	266 26 20.8	1 34 32.2
21.0	189 13 36.2	4 28 59.4	237 3 6.5	1 5 50.8	273 43 22.2	2 11 55.8
21.5	195 34 58.2	4 10 31.5	243 57 14.4	- 0 28 2.2	281 3 51.5	2 47 24.7
22.0	201 59 59.3	3 48 42.7	250 55 11.4	+ 0 10 33.0	288 26 54.2	3 20 16.5
22.5	208 28 36.5	3 23 44.0	257 56 30.4	0 49 17.8	295 51 32.0	3 49 51.9
23.0	215 0 44.2	2 55 49.9	265 0 41.7	1 27 33.5	303 16 44.4	4 15 36.4
23.5	221 36 14.5	2 25 18.7	272 7 13.5	2 4 40.7	310 41 31.6	4 37 1.1
24.0	228 14 57.8	1 52 32.1	279 15 32.9	2 40 0.6	318 4 56.7	4 53 44.2
24.5	234 56 43.6	1 17 55.0	286 25 7.1	3 12 55.9	325 26 7.7	5 5 31.4
25.0	241 41 21.2	0 41 55.3	293 35 23.9	3 42 52.4	332 44 19.1	5 12 15.5
25.5	248 28 40.1	- 0 5 3.3	300 45 52.8	4 9 19.5	339 58 53.0	5 13 56.7
26.0	255 18 30.3	+ 0 32 8.8	307 56 5.4	4 31 51.2	347 9 20.0	5 10 41.3
26.5	262 10 42.6	1 9 7.7	315 5 35.5	4 50 6.2	354 15 18.9	5 2 41.3
27.0	269 5 8.6	1 45 19.3	322 13 59.9	5 3 48.8	1 16 36.8	4 50 13.2
27.5	276 1 40.7	2 20 9.7	329 20 58.2	5 12 48.3	8 13 7.8	4 33 37.0
28.0	283 0 11.6	2 53 5.4	336 26 12.5	5 16 59.5	15 4 52.1	4 13 15.6
28.5	290 0 33.9	3 23 34.6	343 29 27.3	5 16 22.4	21 51 55.1	3 49 33.8
29.0	297 2 39.6	3 51 7.0	350 30 29.7	5 11 1.8	28 34 26.1	3 22 57.5
29.5	304 6 19.4	4 15 14.9	357 29 8.4	5 1 7.0	35 12 37.6	2 53 54.0
30.0	311 11 22.3	4 35 33.7	4 25 13.4	4 46 51.4	41 46 43.3	2 22 50.1
30.5	318 17 35.1	4 51 42.1	11 18 36.0	4 28 32.2	48 16 58.5	1 50 13.2
31.0	325 24 41.5	5 3 23.2	18 9 8.5	4 6 30.1	54 43 38.4	1 16 30.7
31.5	332 32 22.2	+ 5 10 24.4	24 56 44.0	+ 3 41 8.4	61 6 58.1	+ 0 42 9.4

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF WASHINGTON.

248 OBLIQUITY OF THE ECLIPTIC, &c.

Mean Noon.	Apparent Obliquity.	Equation of Equinoxes.		Precession of Equinoxes in Longitude.	The Sun's		Mean Longitude of Moon's Ascending Node.
		In Longitude.	In R. A.		Aberration.	Hor. Parallax.	
1881.	23° 27'						
Jan. 0	15.61	+17.70	+1.082	0.00	-20.80	9.00	266° 37.4
10	15.62	18.10	1.107	1.38	20.79	9.00	266 5.6
20	15.68	18.40	1.126	2.75	20.77	8.99	265 33.8
30	15.77	18.56	1.135	4.13	20.74	8.98	265 2.1
Feb. 9	15.86	18.55	1.135	5.50	20.71	8.96	264 30.3
19	15.94	18.39	1.125	6.88	-20.67	8.94	263 58.5
Mar. 1	15.98	18.10	1.107	8.26	20.63	8.92	263 26.7
11	15.98	17.70	1.082	9.63	20.57	8.90	262 55.0
21	15.91	17.25	1.054	11.01	20.51	8.87	262 23.2
31	15.77	16.80	1.027	12.38	20.45	8.85	261 51.4
Apr. 10	15.57	16.41	1.003	13.76	-20.39	8.82	261 19.6
20	15.33	16.11	0.984	15.14	20.34	8.80	260 47.9
30	15.06	15.94	0.974	16.51	20.29	8.78	260 16.1
May 10	14.77	15.91	0.972	17.89	20.24	8.76	259 44.3
20	14.50	16.01	0.978	19.26	20.19	8.74	259 12.6
30	14.27	16.22	0.991	20.64	-20.16	8.72	258 40.8
June 9	14.07	16.52	1.010	22.02	20.13	8.71	258 9.0
19	13.94	16.88	1.032	23.39	20.11	8.71	257 37.2
29	13.86	17.25	1.054	24.77	20.11	8.70	257 5.5
July 9	13.84	17.57	1.074	26.14	20.10	8.70	256 33.7
19	13.87	17.81	1.089	27.52	-20.12	8.71	256 1.9
29	13.94	17.94	1.097	28.90	20.14	8.72	255 30.1
Aug. 8	14.03	17.94	1.097	30.27	20.17	8.73	254 58.4
18	14.11	17.80	1.087	31.65	20.20	8.75	254 26.6
28	14.17	17.52	1.070	33.02	20.24	8.77	253 54.8
Sept. 7	14.20	17.13	1.047	34.40	-20.29	8.79	253 23.1
17	14.16	16.66	1.020	35.78	20.35	8.81	252 51.3
27	14.06	16.21	0.991	37.15	20.41	8.84	252 19.5
Oct. 7	13.91	15.75	0.963	38.53	20.47	8.87	251 47.7
17	13.70	15.37	0.940	39.90	20.53	8.88	251 16.0
27	13.44	15.10	0.924	41.28	-20.59	8.91	250 44.2
Nov. 6	13.16	14.97	0.916	42.66	20.64	8.93	250 12.4
16	12.87	15.01	0.918	44.03	20.69	8.95	249 40.7
26	12.61	15.20	0.929	45.41	20.73	8.97	249 8.9
Dec. 6	12.39	15.50	0.948	46.78	-20.76	8.98	248 37.1
16	12.22	15.89	0.972	48.16	20.78	8.99	248 5.3
26	12.13	16.31	0.997	49.54	20.79	9.00	247 33.6
36	12.11	+16.70	+1.020	50.91	-20.79	9.00	247 1.8
Mean Obliquity, 1881.0, 23° 27' 16".60 Motion in 100 days, -0".1272 Precession for 1881.5, . . . 50".2594 Log. 1.70122 Precession in a Solar Day, . . . 0".1376 Log. 9.13863 Precession in a Sidereal Day, . . . 0".1372 Log. 9.13744 Sun's Mean Hor. Parallax, . . . 8".848							Daily Motion. -3".177

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR REDUCTION OF MEAN PLACES, 1881.0, TO APPARENT PLACES.

Solar day. Sid. hour.	Log. A.	Log. B.	Log. C.	Log. D.	Solar day. Sid. hour.	Log. A.	Log. B.	Log. C.	Log. D.
Jan. 1	9.5539	9.9946	π 0.5916	1.3010	Mar. 1	9.7210	9.7264	π 1.2508	0.8052
2	9.5582	9.9947	0.6864	1.2992	2	9.7226	9.7241	1.2532	0.7813
3	9.5625	9.9946	0.6585	1.2974	3	9.7242	9.7222	1.2555	0.7560
4	9.5668	9.9942	0.6883	1.2954	4	9.7259	9.7208	1.2577	0.7290
(7.0) 5	9.5709	9.9935	0.7160	1.2932	5	9.7275	9.7199	1.2597	0.7000
6	9.5750	9.9926	π 0.7419	1.2909	h 6	9.7290	9.7195	π 1.2615	0.6689
7	9.5791	9.9914	0.7662	1.2885	(11.0) 7	9.7306	9.7195	1.2631	0.6351
8	9.5831	9.9899	0.7891	1.2859	8	9.7322	9.7199	1.2648	0.5986
9	9.5870	9.9781	0.8107	1.2831	9	9.7337	9.7208	1.2662	0.5585
10	9.5908	9.9861	0.8312	1.2802	10	9.7352	9.7221	1.2674	0.5151
11	9.5946	9.9840	π 0.8505	1.2771	11	9.7367	9.7239	π 1.2687	0.4647
12	9.5984	9.9817	0.8690	1.2739	12	9.7382	9.7265	1.2697	0.4087
13	9.6021	9.9791	0.8865	1.2705	13	9.7396	9.7296	1.2705	0.3446
14	9.6057	9.9762	0.9033	1.2669	14	9.7411	9.7331	1.2713	0.2690
15	9.6093	9.9731	0.9194	1.2632	15	9.7426	9.7371	1.2719	0.1772
16	9.6129	9.9697	π 0.9346	1.2593	16	9.7440	9.7416	π 1.2724	0.0607
17	9.6163	9.9661	0.9493	1.2553	17	9.7454	9.7467	1.2728	9.9015
18	9.6197	9.9622	0.9633	1.2510	18	9.7469	9.7520	1.2730	9.6464
h 19	9.6231	9.9580	0.9767	1.2466	19	9.7483	9.7580	1.2731	π 8.9542
(21.0) 20	9.6264	9.9535	0.9896	1.2420	20	9.7497	9.7643	1.2731	π 9.4216
21	9.6297	9.9490	π 1.0020	1.2372	h 21	9.7511	9.7712	π 1.2729	π 9.7917
22	9.6328	9.9443	1.0139	1.2322	(12.0) 22	9.7525	9.7783	1.2727	9.9872
23	9.6360	9.9394	1.0254	1.2270	23	9.7539	9.7857	1.2722	0.1232
24	9.6391	9.9344	1.0364	1.2216	24	9.7553	9.7935	1.2716	0.2240
25	9.6421	9.9292	1.0470	1.2160	25	9.7568	9.8014	1.2710	0.3068
26	9.6451	9.9238	π 1.0572	1.2102	26	9.7582	9.8097	π 1.2702	π 0.3764
27	9.6480	9.9183	1.0671	1.2042	27	9.7596	9.8183	1.2692	0.4361
28	9.6509	9.9126	1.0767	1.1980	28	9.7610	9.8272	1.2682	0.4880
29	9.6537	9.9068	1.0858	1.1915	29	9.7624	9.8362	1.2670	0.5347
30	9.6565	9.9008	1.0946	1.1848	30	9.7638	9.8456	1.2656	0.5766
31	9.6592	9.8946	1.1031	1.1779	31	9.7652	9.8553	1.2642	0.6148
Feb. 1	9.6619	9.8883	π 1.1113	1.1707	Apr. 1	9.7666	9.8649	π 1.2625	π 0.6495
2	9.6645	9.8819	1.1193	1.1633	2	9.7680	9.8746	1.2608	0.6817
3	9.6671	9.8755	1.1279	1.1556	3	9.7695	9.8844	1.2590	0.7115
h 4	9.6697	9.8690	1.1345	1.1476	4	9.7709	9.8942	1.2569	0.7391
(9.0) 5	9.6722	9.8624	1.1415	1.1393	h 5	9.7724	9.9042	1.2547	0.7650
6	9.6746	9.8558	π 1.1484	1.1308	(13.0) 6	9.7738	9.9141	π 1.2525	π 0.7894
7	9.6771	9.8491	1.1551	1.1219	7	9.7753	9.9242	1.2501	0.8122
8	9.6794	9.8424	1.1615	1.1127	8	9.7767	9.9343	1.2475	0.8338
9	9.6817	9.8356	1.1676	1.1032	9	9.7782	9.9445	1.2448	0.8543
10	9.6840	9.8287	1.1736	1.0933	10	9.7796	9.9548	1.2420	0.8737
11	9.6863	9.8218	π 1.1793	1.0830	11	9.7811	9.9650	π 1.2390	π 0.8921
12	9.6885	9.8151	1.1848	1.0724	12	9.7826	9.9752	1.2358	0.9097
13	9.6907	9.8085	1.1901	1.0614	13	9.7841	9.9853	1.2325	0.9265
14	9.6928	9.8019	1.1952	1.0500	14	9.7856	9.9953	1.2291	0.9425
15	9.6949	9.7955	1.2002	1.0381	15	9.7871	0.0053	1.2255	0.9578
16	9.6969	9.7891	π 1.2049	1.0258	16	9.7887	0.0152	π 1.2217	π 0.9725
17	9.6990	9.7829	1.2095	1.0129	17	9.7902	0.0251	1.2178	0.9864
18	9.7010	9.7767	1.2139	0.9995	18	9.7918	0.0349	1.2138	1.0000
h 19	9.7029	9.7707	1.2181	0.9857	19	9.7933	0.0447	1.2096	1.0129
(10.0) 20	9.7049	9.7648	1.2221	0.9712	20	9.7949	0.0544	1.2052	1.0252
21	9.7068	9.7593	π 1.2259	0.9561	h 21	9.7965	0.0639	π 1.2006	π 1.0372
22	9.7086	9.7541	1.2296	0.9402	(14.0) 22	9.7981	0.0733	1.1959	1.0458
23	9.7105	9.7492	1.2331	0.9236	23	9.7997	0.0826	1.1909	1.0598
24	9.7123	9.7446	1.2364	0.9063	24	9.8014	0.0918	1.1858	1.0705
25	9.7141	9.7404	1.2396	0.8882	25	9.8030	0.1008	1.1806	1.0808
26	9.7158	9.7364	1.2426	0.8691	26	9.8046	0.1097	1.1752	1.0907
27	9.7176	9.7328	π 1.2455	0.8489	27	9.8063	0.1185	π 1.1695	π 1.1004
28	9.7193	9.7294	1.2482	0.8277	28	9.8080	0.1272	1.1636	1.1096
29	9.7210	9.7264	1.2508	0.8052	29	9.8097	0.1357	1.1575	1.1185
30	9.7226	9.7241	1.2532	0.7813	30	9.8113	0.1441	1.1512	1.1271
31	9.7242	9.7222	1.2555	0.7560	31	9.8131	0.1524	1.1447	1.1354
32	9.7259	9.7208	π 1.2577	0.7290	32	9.8148	0.1606	π 1.1381	π 1.1435

FOR WASHINGTON MEAN MIDNIGHT.									
LOGARITHMS FOR REDUCTION OF MEAN PLACES, 1881.0, TO APPARENT PLACES.									
Solar day. Sid. hour.	Log. A.	Log. B.	Log. C.	Log. D.	Solar day. Sid. hour.	Log. A.	Log. B.	Log. C.	Log. D.
May 1	9.8131	0.1524	π 1.1447	π 1.1354	July 1	9.9268	0.4002	0.5300	π 1.3035
2	9.8148	0.1606	1.1381	1.1435	2	9.9285	0.4005	0.5676	1.3020
3	9.8165	0.1686	1.1312	1.1513	3	9.9303	0.4007	0.6019	1.3005
4	9.8183	0.1764	1.1240	1.1587	4	9.9320	0.4009	0.6338	1.2989
5	9.8200	0.1841	1.1165	1.1660	5	9.9337	0.4009	0.6633	1.2971
^h 6	9.8218	0.1917	π 1.1088	π 1.1730	^h (19.0) 6	9.9354	0.4009	0.6908	π 1.2952
(15.0) 7	9.8235	0.1992	1.1009	1.1798	7	9.9371	0.4007	0.7167	1.2932
8	9.8253	0.2065	1.0928	1.1863	8	9.9387	0.4005	0.7409	1.2910
9	9.8271	0.2136	1.0843	1.1926	9	9.9404	0.4002	0.7637	1.2887
10	9.8289	0.2206	1.0755	1.1987	10	9.9421	0.3997	0.7854	1.2863
11	9.8308	0.2275	π 1.0664	π 1.2046	11	9.9437	0.3992	0.8058	π 1.2837
12	9.8326	0.2342	1.0570	1.2103	12	9.9453	0.3987	0.8253	1.2811
13	9.8344	0.2408	1.0473	1.2158	13	9.9469	0.3980	0.8438	1.2783
14	9.8363	0.2472	1.0373	1.2211	14	9.9485	0.3973	0.8614	1.2753
15	9.8381	0.2535	1.0269	1.2262	15	9.9500	0.3965	0.8782	1.2721
16	9.8400	0.2597	π 1.0161	π 1.2312	16	9.9516	0.3966	0.8943	π 1.2689
17	9.8419	0.2657	1.0049	1.2360	17	9.9531	0.3947	0.9097	1.2655
18	9.8437	0.2716	0.9933	1.2406	18	9.9546	0.3937	0.9245	1.2619
19	9.8456	0.2773	0.9813	1.2450	19	9.9561	0.3926	0.9385	1.2582
20	9.8475	0.2829	0.9688	1.2492	20	9.9576	0.3914	0.9521	1.2544
^h (16.0) 21	9.8494	0.2883	π 0.9559	π 1.2533	^h (20.0) 21	9.9591	0.3902	0.9652	π 1.2504
22	9.8513	0.2936	0.9423	1.2571	22	9.9605	0.3889	0.9777	1.2462
23	9.8532	0.2988	0.9282	1.2610	23	9.9620	0.3876	0.9898	1.2419
24	9.8551	0.3038	0.9136	1.2646	24	9.9634	0.3862	1.0015	1.2374
25	9.8570	0.3087	0.8983	1.2680	25	9.9648	0.3847	1.0128	1.2327
26	9.8589	0.3135	π 0.8822	π 1.2713	26	9.9662	0.3832	1.0236	π 1.2279
27	9.8608	0.3181	0.8656	1.2745	27	9.9676	0.3817	1.0340	1.2229
28	9.8628	0.3225	0.8481	1.2775	28	9.9689	0.3801	1.0441	1.2177
29	9.8647	0.3268	0.8297	1.2804	29	9.9703	0.3784	1.0538	1.2122
30	9.8666	0.3310	0.8104	1.2832	30	9.9716	0.3767	1.0633	1.2067
31	9.8686	0.3351	0.7900	1.2858	31	9.9729	0.3750	1.0724	1.2009
June 1	9.8705	0.3390	π 0.7686	π 1.2892	Aug. 1	9.9742	0.3733	1.0812	π 1.1949
2	9.8724	0.3428	0.7459	1.2906	2	9.9755	0.3715	1.0896	1.1887
3	9.8744	0.3465	0.7220	1.2927	3	9.9767	0.3697	1.0979	1.1823
4	9.8763	0.3500	0.6963	1.2947	^h 4	9.9780	0.3679	1.1058	1.1757
^h 5	9.8783	0.3535	0.6691	1.2967	(21.0) 5	9.9792	0.3661	1.1135	1.1689
(17.0) 6	9.8802	0.3568	π 0.6398	π 1.2986	6	9.9804	0.3643	1.1210	π 1.1617
7	9.8821	0.3599	0.6085	1.3001	7	9.9816	0.3624	1.1282	1.1544
8	9.8841	0.3630	0.5744	1.3017	8	9.9828	0.3605	1.1352	1.1468
9	9.8860	0.3659	0.5373	1.3031	9	9.9840	0.3586	1.1420	1.1390
10	9.8879	0.3686	0.4967	1.3044	10	9.9851	0.3567	1.1484	1.1308
11	9.8898	0.3713	π 0.4516	π 1.3056	11	9.9862	0.3548	1.1547	π 1.1224
12	9.8918	0.3738	0.4013	1.3066	12	9.9874	0.3530	1.1608	1.1137
13	9.8937	0.3762	0.3442	1.3076	13	9.9884	0.3511	1.1667	1.1047
14	9.8956	0.3785	0.2785	1.3084	14	9.9895	0.3492	1.1725	1.0953
15	9.8975	0.3807	0.2009	1.3090	15	9.9906	0.3474	1.1779	1.0856
16	9.8994	0.3828	π 0.1062	π 1.3096	16	9.9917	0.3456	1.1831	π 1.0757
17	9.9013	0.3847	9.9845	1.3100	17	9.9927	0.3438	1.1883	1.0653
18	9.9032	0.3865	9.8145	1.3103	18	9.9937	0.3420	1.1934	1.0546
19	9.9050	0.3882	9.5327	1.3105	19	9.9947	0.3403	1.1981	1.0434
20	9.9069	0.3898	π 8.4624	1.3106	20	9.9957	0.3386	1.2027	1.0318
^h (18.0) 21	9.9087	0.3913	π 9.4518	π 1.3105	(22.0) 21	9.9967	0.3370	1.2072	π 1.0198
22	9.9106	0.3927	9.7745	1.3104	22	9.9977	0.3354	1.2114	1.0073
23	9.9124	0.3939	9.9576	1.3101	23	9.9987	0.3339	1.2155	0.9942
24	9.9143	0.3951	0.0859	1.3096	24	9.9996	0.3325	1.2195	0.9806
25	9.9161	0.3961	0.1845	1.3091	25	0.0005	0.3311	1.2233	0.9665
26	9.9179	0.3971	0.2648	1.3085	26	0.0015	0.3298	1.2269	0.9518
27	9.9197	0.3979	0.3326	π 1.3077	27	0.0024	0.3285	1.2304	π 0.9365
28	9.9215	0.3986	0.3910	1.3068	28	0.0033	0.3273	1.2338	0.9203
29	9.9233	0.3992	0.4425	1.3058	29	0.0042	0.3262	1.2370	0.9035
30	9.9250	0.3998	0.4886	1.3047	30	0.0050	0.3252	1.2400	0.8858
31	9.9268	0.4002	0.5300	1.3035	31	0.0059	0.3243	1.2430	0.8674
32	9.9285	0.4005	0.5676	π 1.3020	32	0.0068	0.3235	1.2457	π 0.8478

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR REDUCTION OF MEAN PLACES, 1881.0, TO APPARENT PLACES.

Solar day. Sid. hour.	Log. A.	Log. B.	Log. C.	Log. D.	Solar day. Sid. hour.	Log. A.	Log. B.	Log. C.	Log. D.
Sept. 1	0.0068	0.3235	1.2457	π 0.9478	Nov. 1	0.0553	0.4658	1.1577	1.1183
2	0.0076	0.3227	1.2483	0.8273	2	0.0563	0.4699	1.1511	1.1271
3	0.0084	0.3221	1.2508	0.8056	h 3	0.0572	0.4739	1.1444	1.1357
4	0.0093	0.3215	1.2532	0.7825	(3.0) 4	0.0582	0.4779	1.1375	1.1440
h 5	0.0101	0.3211	1.2554	0.7589	5	0.0592	0.4819	1.1303	1.1520
6	0.0109	0.3207	1.2574	π 0.7321	6	0.0602	0.4859	1.1228	1.1598
7	0.0117	0.3204	1.2594	0.7042	7	0.0612	0.4898	1.1151	1.1673
8	0.0125	0.3203	1.2612	0.6743	8	0.0622	0.4937	1.1071	1.1746
9	0.0133	0.3203	1.2629	0.6421	9	0.0632	0.4975	1.0988	1.1815
10	0.0141	0.3204	1.2645	0.6070	10	0.0643	0.5013	1.0902	1.1882
11	0.0149	0.3207	1.2659	π 0.5688	11	0.0653	0.5051	1.0812	1.1948
12	0.0156	0.3210	1.2671	0.5266	12	0.0664	0.5087	1.0719	1.2011
13	0.0164	0.3215	1.2683	0.4798	13	0.0675	0.5124	1.0624	1.2072
14	0.0171	0.3221	1.2693	0.4281	14	0.0685	0.5160	1.0524	1.2131
15	0.0179	0.3228	1.2702	0.3671	15	0.0696	0.5196	1.0420	1.2187
16	0.0187	0.3236	1.2711	π 0.2971	16	0.0707	0.5231	1.0313	1.2242
17	0.0194	0.3246	1.2717	0.2140	17	0.0718	0.5265	1.0202	1.2296
18	0.0202	0.3257	1.2722	0.1099	18	0.0729	0.5299	1.0086	1.2346
h 19	0.0209	0.3260	1.2727	9.9727	h 19	0.0740	0.5332	0.9965	1.2394
(0.0) 20	0.0216	0.3263	1.2729	9.7701	(4.0) 20	0.0751	0.5365	0.9840	1.2440
21	0.0224	0.3268	1.2731	π 9.3784	21	0.0762	0.5397	0.9709	1.2485
22	0.0231	0.3314	1.2731	π 9.0453	22	0.0774	0.5428	0.9573	1.2528
23	0.0238	0.3331	1.2730	9.6637	23	0.0785	0.5459	0.9431	1.2570
24	0.0246	0.3350	1.2728	9.9090	24	0.0797	0.5489	0.9283	1.2610
25	0.0253	0.3369	1.2724	0.0648	25	0.0808	0.5518	0.9128	1.2648
26	0.0260	0.3390	1.2719	0.1787	26	0.0820	0.5547	0.8966	1.2684
27	0.0268	0.3412	1.2713	0.2689	27	0.0832	0.5575	0.8796	1.2719
28	0.0275	0.3435	1.2706	0.3438	28	0.0844	0.5602	0.8618	1.2752
29	0.0282	0.3460	1.2698	0.4074	29	0.0855	0.5628	0.8430	1.2784
30	0.0290	0.3485	1.2687	0.4629	30	0.0867	0.5654	0.8233	1.2814
Oct. 1	0.0297	0.3512	1.2676	0.5121	Dec. 1	0.0879	0.5679	0.8025	1.2842
2	0.0305	0.3539	1.2664	0.5561	2	0.0891	0.5703	0.7806	1.2868
3	0.0312	0.3567	1.2649	0.5959	3	0.0903	0.5726	0.7572	1.2894
h 4	0.0319	0.3597	1.2634	0.6321	h 4	0.0915	0.4749	0.7324	1.2919
(1.0) 5	0.0327	0.3627	1.2618	0.6656	(5.0) 5	0.0927	0.5771	0.7060	1.2941
6	0.0335	0.3659	1.2599	0.6966	6	0.0939	0.5792	0.6776	1.2961
7	0.0342	0.3691	1.2579	0.7255	7	0.0951	0.5812	0.6472	1.2980
8	0.0349	0.3724	1.2559	0.7523	8	0.0963	0.5831	0.6142	1.2999
9	0.0357	0.3758	1.2537	0.7776	9	0.0975	0.5850	0.5795	1.3015
10	0.0365	0.3793	1.2513	0.8014	10	0.0987	0.5868	0.5393	1.3030
11	0.0372	0.3828	1.2487	0.8238	11	0.1000	0.5885	0.4961	1.3045
12	0.0380	0.3864	1.2463	0.8449	12	0.1012	0.5901	0.4479	1.3057
13	0.0388	0.3900	1.2433	0.8651	13	0.1024	0.5916	0.3937	1.3067
14	0.0396	0.3937	1.2403	0.8841	14	0.1036	0.5930	0.3315	1.3078
15	0.0404	0.3975	1.2372	0.9024	15	0.1048	0.5944	0.2686	1.3086
16	0.0412	0.4013	1.2340	0.9197	16	0.1060	0.5957	0.1708	1.3092
17	0.0420	0.4052	1.2306	0.9362	17	0.1072	0.5970	0.0603	1.3097
18	0.0429	0.4091	1.2269	0.9520	18	0.1085	0.5981	9.9117	1.3102
19	0.0437	0.4131	1.2231	0.9672	19	0.1097	0.5991	9.6840	1.3104
h 20	0.0445	0.4170	1.2192	0.9817	(3.0) 20	0.1109	0.6001	π 9.1761	1.3105
21	0.0454	0.4210	1.2151	0.9956	21	0.1121	0.6010	π 9.2624	1.3106
22	0.0463	0.4251	1.2109	1.0090	22	0.1133	0.6018	9.7126	1.3104
23	0.0471	0.4291	1.2065	1.0219	23	0.1145	0.6026	9.9289	1.3102
24	0.0480	0.4331	1.2018	1.0342	24	0.1156	0.6032	0.0726	1.3098
25	0.0489	0.4372	1.1970	1.0461	25	0.1168	0.6038	0.1804	1.3092
26	0.0498	0.4413	1.1920	1.0576	26	0.1180	0.6043	0.2670	1.3085
27	0.0507	0.4455	1.1868	1.0687	27	0.1192	0.6047	π 0.3387	1.3077
28	0.0516	0.4496	1.1814	1.0793	28	0.1204	0.6050	0.4001	1.3067
29	0.0525	0.4537	1.1758	1.0896	29	0.1215	0.6053	0.4538	1.3055
30	0.0534	0.4577	1.1700	1.0994	30	0.1227	0.6055	0.5013	1.3043
31	0.0544	0.4618	1.1640	1.1090	31	0.1238	0.6056	0.5441	1.3029
32	0.0553	0.4658	1.1577	1.1183	32	0.1250	0.6057	π 0.5829	1.3013

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1881.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ .	f .	Log g .	G .	Log h .	H .	Log i .	i .	f .	G .	H .
Jan. 1	0.0055	+16.55	0.8602	7 50	1.3091	348 57	π 0.2290	-1.69	+1.103	0 31.4	23 15.8
2	.0082	16.72	0.8644	7 45	1.3089	348 0	0.2638	1.84	1.114	0 31.1	23 12.0
3	.0110	16.89	0.8686	7 41	1.3086	347 3	0.2959	1.98	1.126	0 30.8	23 8.2
4	.0137	17.05	0.8728	7 36	1.3083	346 7	0.3258	2.12	1.137	0 30.5	23 4.5
^h (7.0) 5	.0164	17.21	0.8769	7 31	1.3080	345 10	0.3536	2.26	1.147	0 30.2	23 0.7
6	.0192	+17.38	0.8809	7 26	1.3076	344 13	π 0.3793	-2.40	+1.158	0 29.8	22 56.9
7	.0219	17.54	0.8848	7 21	1.3072	343 16	0.4036	2.54	1.169	0 29.4	22 53.1
8	.0247	17.69	0.8888	7 16	1.3069	342 19	0.4266	2.67	1.180	0 29.0	22 49.3
9	.0274	17.84	0.8926	7 10	1.3065	341 22	0.4482	2.80	1.190	0 28.7	22 45.5
10	.0301	18.01	0.8964	7 4	1.3061	340 25	0.4687	2.94	1.201	0 28.3	22 41.7
11	.0329	+18.17	0.9001	6 58	1.3056	339 28	π 0.4880	-3.08	+1.212	0 27.9	22 37.9
12	.0356	18.33	0.9037	6 52	1.3052	338 30	0.5065	3.21	1.222	0 27.5	22 34.0
13	.0383	18.49	0.9074	6 46	1.3047	337 33	0.5241	3.34	1.233	0 27.1	22 30.2
14	.0411	18.64	0.9109	6 40	1.3043	336 35	0.5409	3.47	1.243	0 26.7	22 26.4
15	.0438	18.79	0.9144	6 34	1.3038	335 37	0.5569	3.61	1.253	0 26.3	22 22.5
16	.0465	+18.95	0.9179	6 28	1.3033	334 39	π 0.5721	-3.73	+1.263	0 25.9	22 18.7
17	.0493	19.10	0.9212	6 22	1.3027	333 41	0.5868	3.86	1.273	0 25.5	22 14.8
18	.0520	19.25	0.9246	6 16	1.3021	332 43	0.6008	3.99	1.283	0 25.1	22 10.9
19	.0548	19.40	0.9278	6 9	1.3016	331 45	0.6142	4.11	1.293	0 24.6	22 7.0
^h (8.0) 20	.0575	19.55	0.9310	6 3	1.3010	330 47	0.6271	4.24	1.303	0 24.2	22 3.1
21	.0602	+19.69	0.9342	5 57	1.3005	329 48	π 0.6394	-4.36	+1.313	0 23.8	21 59.2
22	.0630	19.84	0.9373	5 50	1.2999	328 49	0.6514	4.48	1.323	0 23.4	21 55.3
23	.0657	19.98	0.9404	5 44	1.2993	327 50	0.6628	4.60	1.332	0 22.9	21 51.4
24	.0685	20.13	0.9434	5 37	1.2987	326 51	0.6738	4.72	1.342	0 22.5	21 47.4
25	.0712	20.26	0.9463	5 31	1.2981	325 52	0.6845	4.83	1.351	0 22.0	21 43.5
26	.0739	+20.40	0.9492	5 25	1.2975	324 53	π 0.6947	-4.95	+1.360	0 21.6	21 39.5
27	.0767	20.54	0.9521	5 19	1.2969	323 53	0.7045	5.06	1.369	0 21.2	21 35.6
28	.0794	20.68	0.9549	5 12	1.2962	322 54	0.7140	5.18	1.378	0 20.8	21 31.6
29	.0822	20.81	0.9577	5 6	1.2956	321 54	0.7233	5.29	1.387	0 20.4	21 27.6
30	.0849	20.95	0.9604	5 0	1.2950	320 54	0.7321	5.40	1.396	0 20.0	21 23.6
31	.0876	21.08	0.9630	4 54	1.2943	319 54	0.7406	5.50	1.405	0 19.5	21 19.6
Feb. 1	.0904	+21.21	0.9656	4 48	1.2936	318 54	π 0.7489	-5.61	+1.414	0 19.2	21 15.6
2	.0931	21.34	0.9682	4 42	1.2930	317 54	0.7568	5.71	1.422	0 18.8	21 11.6
3	.0958	21.46	0.9707	4 37	1.2923	316 53	0.7645	5.81	1.431	0 18.4	21 7.5
4	.0986	21.59	0.9732	4 31	1.2917	315 53	0.7719	5.92	1.439	0 18.0	21 3.5
^h (9.0) 5	.1013	21.71	0.9757	4 25	1.2910	314 52	0.7790	6.01	1.448	0 17.6	20 59.4
6	.1040	+21.84	0.9781	4 20	1.2903	313 50	π 0.7858	-6.11	+1.456	0 17.2	20 55.4
7	.1068	21.96	0.9804	4 14	1.2896	312 49	0.7925	6.20	1.464	0 16.8	20 51.3
8	.1095	22.08	0.9827	4 9	1.2890	311 48	0.7990	6.29	1.472	0 16.5	20 47.2
9	.1123	22.20	0.9850	4 4	1.2883	310 46	0.8051	6.38	1.480	0 16.2	20 43.1
10	.1150	22.31	0.9873	3 59	1.2877	309 44	0.8110	6.47	1.488	0 15.8	20 39.0
11	.1177	+22.43	0.9895	3 54	1.2870	308 42	π 0.8168	-6.56	+1.496	0 15.5	20 34.5
12	.1205	22.54	0.9916	3 49	1.2864	307 40	0.8223	6.64	1.503	0 15.2	20 30.6
13	.1232	22.66	0.9938	3 44	1.2857	306 38	0.8277	6.72	1.511	0 14.9	20 26.5
14	.1260	22.77	0.9958	3 40	1.2851	305 36	0.8328	6.80	1.518	0 14.6	20 22.3
15	.1287	22.88	0.9979	3 36	1.2845	304 33	0.8377	6.88	1.525	0 14.3	20 18.2
16	.1314	+22.99	1.0000	3 31	1.2839	303 30	π 0.8424	-6.96	+1.532	0 14.0	20 14.0
17	.1342	23.09	1.0020	3 27	1.2833	302 27	0.8470	7.03	1.539	0 13.8	20 9.8
18	.1369	23.20	1.0040	3 23	1.2827	301 24	0.8514	7.10	1.546	0 13.6	20 5.6
19	.1396	23.30	1.0059	3 20	1.2821	300 21	0.8555	7.17	1.553	0 13.3	20 1.4
^h (10.0) 20	.1424	23.41	1.0078	3 16	1.2815	299 18	0.8595	7.24	1.560	0 13.1	19 57.2
21	.1451	+23.51	1.0097	3 13	1.2809	298 15	π 0.8634	-7.30	+1.567	0 12.9	19 53.0
22	.1479	23.61	1.0115	3 10	1.2804	297 11	0.8671	7.36	1.574	0 12.7	19 48.7
23	.1506	23.71	1.0134	3 7	1.2798	296 07	0.8706	7.42	1.581	0 12.5	19 44.5
24	.1533	23.81	1.0152	3 4	1.2793	295 4	0.8738	7.48	1.587	0 12.3	19 40.3
25	.1561	23.91	1.0170	3 2	1.2788	294 0	0.8771	7.54	1.594	0 12.2	19 36.0
26	.1588	+24.01	1.0187	2 59	1.2784	292 56	π 0.8801	-7.59	+1.600	0 12.0	19 31.7
27	.1615	24.10	1.0204	2 57	1.2780	291 52	0.8830	7.64	1.607	0 11.9	19 27.5
28	.1643	24.20	1.0221	2 55	1.2776	290 47	0.8857	7.68	1.613	0 11.7	19 23.2
29	.1670	24.29	1.0237	2 53	1.2771	289 43	0.8883	7.73	1.619	0 11.6	19 18.9
30	.1698	24.38	1.0254	2 52	1.2767	288 39	0.8907	7.77	1.626	0 11.5	19 14.6
31	0.1725	+24.48	1.0270	2 50	1.2763	287 34	π 0.8930	-7.82	+1.632	0 11.4	19 10.3

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1881.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ .	f .	Log g .	G .	Log h .	H .	Log i .	i .	f .	G .	H .
Mar. 1	0.1670	+24.29	1.0237	2 53	1.2771	289 43	0.8883	-7.73	+1.619	0 11.6	19 18.9
2	.1698	24.38	1.0254	2 52	1.2767	288 39	0.8907	7.77	1.626	0 11.5	19 14.6
3	.1725	24.48	1.0270	2 50	1.2763	287 34	0.8930	7.82	1.632	0 11.4	19 10.3
4	.1752	24.57	1.0286	2 49	1.2759	286 30	0.8952	7.86	1.638	0 11.3	19 6.0
5	.1780	24.66	1.0302	2 48	1.2756	285 25	0.8971	8.89	1.644	0 11.2	19 1.6
6	.1807	+24.75	1.0317	2 47	1.2753	284 21	0.8989	-7.92	+1.650	0 11.1	18 57.3
(11.0) 7	.1834	24.84	1.0333	2 47	1.2750	283 16	0.9007	7.95	1.656	0 11.1	18 53.0
8	.1862	24.92	1.0348	2 46	1.2747	282 11	0.9023	7.98	1.662	0 11.1	18 48.7
9	.1889	25.01	1.0364	2 46	1.2744	281 6	0.9037	8.01	1.667	0 11.0	18 44.3
10	.1917	25.10	1.0379	2 46	1.2742	280 1	0.9049	8.04	1.673	0 11.0	18 40.0
11	.1944	+25.18	1.0394	2 46	1.2739	278 56	0.9061	-8.06	+1.679	0 11.1	18 35.7
12	.1971	25.27	1.0409	2 47	1.2737	277 51	0.9071	8.07	1.685	0 11.1	18 31.4
13	.1999	25.36	1.0424	2 47	1.2736	276 46	0.9080	8.09	1.691	0 11.2	18 27.0
14	.2026	25.44	1.0438	2 48	1.2735	275 41	0.9087	8.10	1.696	0 11.2	18 22.7
15	.2054	25.53	1.0453	2 49	1.2734	274 36	0.9093	8.12	1.702	0 11.3	18 18.3
16	.2081	+25.61	1.0468	2 50	1.2733	273 31	0.9098	-8.13	+1.708	0 11.4	18 14.0
17	.2108	25.70	1.0483	2 52	1.2732	272 26	0.9101	8.13	1.713	0 11.5	18 9.7
18	.2136	25.78	1.0497	2 53	1.2732	271 21	0.9104	8.14	1.719	0 11.6	18 5.4
19	.2163	25.87	1.0511	2 55	1.2731	270 16	0.9106	8.14	1.725	0 11.7	18 1.0
20	.2190	25.95	1.0525	2 57	1.2731	269 11	0.9106	8.14	1.730	0 11.8	17 56.7
21	.2218	+26.03	1.0539	2 59	1.2731	268 6	0.9104	-8.14	+1.736	0 11.9	17 52.4
(12.0) 22	.2245	26.11	1.0553	3 2	1.2732	267 1	0.9101	8.13	1.741	0 12.1	17 48.1
23	.2273	26.20	1.0568	3 4	1.2732	265 56	0.9097	8.13	1.747	0 12.3	17 43.7
24	.2300	26.28	1.0582	3 7	1.2733	264 52	0.9091	8.12	1.753	0 12.4	17 39.4
25	.2327	26.37	1.0596	3 10	1.2735	263 48	0.9084	8.10	1.758	0 12.6	17 35.1
26	.2355	+26.45	1.0611	3 13	1.2736	262 43	0.9076	-8.08	+1.764	0 12.9	17 30.8
27	.2382	26.54	1.0625	3 16	1.2738	261 39	0.9067	8.07	1.770	0 13.1	17 26.5
28	.2409	26.63	1.0639	3 20	1.2740	260 34	0.9056	8.05	1.775	0 13.4	17 22.2
29	.2437	26.71	1.0653	3 23	1.2742	259 30	0.9044	8.02	1.781	0 13.6	17 17.9
30	.2464	26.80	1.0668	3 27	1.2745	258 26	0.9031	8.00	1.787	0 13.8	17 13.7
31	.2492	26.88	1.0682	3 31	1.2747	257 22	0.9016	7.97	1.793	0 14.1	17 9.5
Apr. 1	.2519	+26.97	1.0697	3 35	1.2750	256 18	0.9000	-7.94	+1.799	0 14.3	17 5.2
2	.2546	27.06	1.0711	3 39	1.2753	255 14	0.8982	7.91	1.804	0 14.6	16 1.0
3	.2574	27.15	1.0726	3 43	1.2756	254 10	0.8964	7.88	1.810	0 14.9	16 56.7
4	.2601	27.24	1.0740	3 47	1.2760	253 6	0.8944	7.84	1.816	0 15.2	16 52.5
5	.2628	27.33	1.0755	3 52	1.2764	252 3	0.8922	7.80	1.822	0 15.5	16 48.2
(13.0) 6	.2656	+27.42	1.0770	3 57	1.2768	251 0	0.8900	-7.76	+1.828	0 15.8	16 44.0
7	.2683	27.51	1.0785	4 1	1.2772	249 57	0.8876	7.72	1.834	0 16.1	16 39.8
8	.2711	27.60	1.0800	4 6	1.2776	248 54	0.8850	7.67	1.840	0 16.4	16 35.6
9	.2738	27.69	1.0815	4 11	1.2780	247 51	0.8822	7.62	1.847	0 16.7	16 31.4
10	.2765	27.79	1.0830	4 16	1.2785	246 49	0.8793	7.57	1.853	0 17.0	16 27.2
11	.2793	+27.88	1.0846	4 21	1.2790	245 47	0.8764	-7.52	+1.859	0 17.4	16 23.1
12	.2820	27.98	1.0861	4 26	1.2794	244 44	0.8733	7.46	1.865	0 17.7	16 18.9
13	.2847	28.08	1.0877	4 32	1.2799	243 42	0.8700	7.41	1.872	0 18.1	16 14.8
14	.2875	28.18	1.0892	4 37	1.2804	242 40	0.8666	7.35	1.878	0 18.4	16 10.7
15	.2902	28.28	1.0908	4 43	1.2810	241 38	0.8630	7.29	1.885	0 18.8	16 6.6
16	.2930	+28.38	1.0924	4 48	1.2815	240 37	0.8592	-7.23	+1.892	0 19.2	16 2.5
17	.2957	28.48	1.0940	4 54	1.2821	239 36	0.8553	7.17	1.898	0 19.6	15 58.4
18	.2984	28.58	1.0956	4 59	1.2827	238 35	0.8513	7.10	1.905	0 20.0	15 54.3
19	.3012	28.68	1.0973	5 5	1.2832	237 34	0.8471	7.03	1.912	0 20.4	15 50.2
20	.3039	28.78	1.0989	5 11	1.2838	236 33	0.8427	6.96	1.919	0 20.7	15 46.2
21	.3066	+28.89	1.1006	5 16	1.2844	235 32	0.8381	-6.89	+1.926	0 21.1	15 42.1
(14.0) 22	.3094	29.00	1.1022	5 22	1.2850	234 32	0.8334	6.81	1.933	0 21.5	15 38.1
23	.3121	29.11	1.1039	5 28	1.2856	233 31	0.8285	6.74	1.940	0 21.9	15 34.1
24	.3149	29.22	1.1056	5 33	1.2862	232 31	0.8234	6.66	1.948	0 22.2	15 30.1
25	.3176	29.33	1.1073	5 39	1.2868	231 31	0.8181	6.58	1.956	0 22.6	15 26.1
26	.3203	+29.44	1.1090	5 45	1.2875	230 32	0.8127	-6.50	+1.963	0 23.0	15 22.1
27	.3231	29.55	1.1108	5 50	1.2881	229 32	0.8070	6.41	1.970	0 23.4	15 18.1
28	.3258	29.66	1.1125	5 56	1.2887	228 33	0.8011	6.32	1.978	0 23.8	15 14.2
29	.3286	29.78	1.1143	6 2	1.2893	227 34	0.7951	6.24	1.985	0 24.2	15 10.3
30	.3313	29.89	1.1160	6 7	1.2900	226 36	0.7889	6.15	1.993	0 24.5	15 6.3
31	0.3340	+30.01	1.1178	6 13	1.2906	225 37	0.7824	-6.05	+2.001	0 24.9	15 2.4

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1881.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ .	f .	Log g .	G.	Log h .	H.	Log i .	i .	f .	G.	H.
May 1	^y 0.3340	+30.01	1.1178	6° 13'	1.2906	225° 37'	m0.7824	-6.05	^a +2.001	^h 0 24.9	^m 15 2.4
2	.3368	30.13	1.1196	6 18	1.2912	224 39	0.7757	5.96	2.009	0 25.3	14 58.5
3	.3395	30.25	1.1214	6 24	1.2919	223 41	0.7688	5.87	2.017	0 25.6	14 54.7
4	.3422	30.37	1.1233	6 29	1.2925	222 43	0.7616	5.78	2.025	0 26.0	14 50.9
5	.3450	30.49	1.1251	6 35	1.2931	221 45	0.7542	5.68	2.033	0 26.3	14 47.0
^h 6	.3477	+30.61	1.1269	6 40	1.2938	220 47	m0.7465	-5.58	+2.041	0 26.7	14 43.2
(15.0) 7	.3505	30.73	1.1288	6 45	1.2944	219 50	0.7386	5.48	2.049	0 27.0	14 39.3
8	.3532	30.86	1.1306	6 50	1.2950	218 53	0.7305	5.38	2.057	0 27.4	14 35.5
9	.3559	30.99	1.1325	6 55	1.2956	217 56	0.7220	5.27	2.066	0 27.7	14 31.7
10	.3587	31.12	1.1344	7 0	1.2963	216 59	0.7132	5.16	2.075	0 28.0	14 27.9
11	.3614	+31.25	1.1363	7 5	1.2969	216 2	m0.7041	-5.06	+2.083	0 28.4	14 24.1
12	.3641	31.38	1.1382	7 10	1.2975	215 6	0.6948	4.95	2.092	0 28.7	14 20.3
13	.3669	31.52	1.1401	7 14	1.2981	214 9	0.6850	4.84	2.101	0 29.0	14 16.6
14	.3696	31.65	1.1420	7 19	1.2987	213 13	0.6750	4.73	2.110	0 29.3	14 12.8
15	.3724	31.79	1.1439	7 23	1.2992	212 17	0.6647	4.62	2.119	0 29.5	14 9.1
16	.3751	+31.92	1.1459	7 28	1.2998	211 21	m0.6539	-4.51	+2.128	0 29.8	14 5.4
17	.3778	32.06	1.1478	7 32	1.3004	210 25	0.6427	4.39	2.138	0 30.1	14 1.7
18	.3806	32.20	1.1497	7 36	1.3009	209 30	0.6310	4.28	2.147	0 30.4	13 58.0
19	.3833	32.34	1.1517	7 40	1.3015	208 35	0.6191	4.16	2.157	0 30.7	13 54.3
20	.3861	32.48	1.1537	7 44	1.3020	207 41	0.6066	4.04	2.166	0 30.9	13 50.7
^h (15.0) 21	.3888	+32.62	1.1556	7 48	1.3025	206 46	m0.5936	-3.92	+2.175	0 31.2	13 47.1
22	.3915	32.76	1.1576	7 51	1.3029	205 50	0.5800	3.80	2.185	0 31.4	13 43.4
23	.3943	32.91	1.1595	7 55	1.3034	204 55	0.5659	3.68	2.195	0 31.7	13 39.7
24	.3970	33.06	1.1615	7 58	1.3039	204 1	0.5512	3.56	2.204	0 31.9	13 36.1
25	.3997	33.20	1.1635	8 2	1.3043	203 7	0.5360	3.44	2.214	0 32.1	13 32.4
26	.4025	+33.35	1.1655	8 5	1.3048	202 12	m0.5201	-3.31	+2.224	0 32.3	13 28.8
27	.4052	33.50	1.1675	8 8	1.3052	201 18	0.5034	3.19	2.234	0 32.5	13 25.2
28	.4080	33.65	1.1694	8 11	1.3057	200 24	0.4859	3.06	2.243	0 32.7	13 21.6
29	.4107	33.80	1.1714	8 13	1.3061	199 30	0.4676	2.93	2.253	0 32.9	13 18.0
30	.4134	33.95	1.1734	8 16	1.3065	198 36	0.4482	2.81	2.263	0 33.1	13 14.4
31	.4162	34.10	1.1754	8 18	1.3068	197 42	0.4279	2.68	2.273	0 33.2	13 10.8
June 1	.4189	+34.25	1.1774	8 20	1.3072	196 49	m0.4064	-2.55	+2.283	0 33.4	13 7.2
2	.4216	34.40	1.1793	8 23	1.3076	195 55	0.3839	2.42	2.293	0 33.5	13 3.7
3	.4244	34.55	1.1813	8 25	1.3079	195 2	0.3600	2.29	2.304	0 33.6	13 0.1
4	.4271	34.71	1.1833	8 27	1.3082	194 9	0.3346	2.16	2.314	0 33.7	12 56.6
^h 5	.4298	34.86	1.1852	8 28	1.3085	193 15	0.3072	2.03	2.324	0 33.8	12 53.0
(17.0) 6	.4326	+35.02	1.1872	8 30	1.3087	192 22	m0.2779	-1.90	+2.334	0 33.9	12 49.5
7	.4353	35.17	1.1891	8 31	1.3090	191 29	0.2465	1.76	2.345	0 34.0	12 45.9
8	.4381	35.33	1.1911	8 32	1.3092	190 36	0.2126	1.63	2.355	0 34.1	12 42.4
9	.4408	35.49	1.1931	8 34	1.3094	189 43	0.1755	1.50	2.366	0 34.2	12 38.9
10	.4435	35.64	1.1950	8 35	1.3096	188 50	0.1348	1.37	2.376	0 34.3	12 35.3
11	.4463	+35.80	1.1970	8 36	1.3098	187 58	m0.0898	-1.24	+2.387	0 34.3	12 31.8
12	.4490	35.96	1.1989	8 36	1.3099	187 6	0.0390	1.10	2.397	0 34.4	12 28.3
13	.4518	36.12	1.2008	8 37	1.3101	186 13	9.9841	0.96	2.408	0 34.4	12 24.8
14	.4545	36.28	1.2027	8 37	1.3102	185 20	9.9143	0.82	2.419	0 34.5	12 21.3
15	.4572	36.44	1.2046	8 38	1.3103	184 27	9.8359	0.69	2.429	0 34.5	12 17.8
16	.4600	+36.60	1.2065	8 38	1.3104	183 35	m9.7402	-0.55	+2.440	0 34.5	12 14.3
17	.4627	36.76	1.2084	8 38	1.3105	182 42	9.6164	0.41	2.450	0 34.5	12 10.8
18	.4654	36.92	1.2103	8 38	1.3105	181 49	9.4407	0.28	2.461	0 34.5	12 7.3
19	.4682	37.08	1.2122	8 38	1.3106	180 57	9.1760	0.15	2.472	0 34.5	12 3.8
20	.4709	37.24	1.2140	8 37	1.3106	180 4	m8.3010	-0.02	2.482	0 34.5	12 0.3
^h (15.0) 21	.4737	+37.40	1.2159	8 37	1.3106	179 12	m9.0792	+0.12	+2.493	0 34.5	11 56.8
22	.4764	37.56	1.2177	8 36	1.3106	178 19	9.4150	0.26	2.504	0 34.4	11 53.3
23	.4791	37.72	1.2196	8 36	1.3105	177 27	9.5900	0.39	2.514	0 34.4	11 49.8
24	.4819	37.88	1.2214	8 35	1.3105	176 34	9.7208	0.53	2.525	0 34.3	11 46.3
25	.4846	38.04	1.2232	8 34	1.3104	175 42	9.8208	0.66	2.536	0 34.3	11 42.8
26	.4874	+38.20	1.2250	8 33	1.3103	174 49	9.9016	+0.80	+2.546	0 34.2	11 39.3
27	.4901	38.35	1.2267	8 32	1.3102	173 57	9.9695	0.93	2.556	0 34.2	11 35.7
28	.4928	38.51	1.2285	8 31	1.3100	173 4	0.0282	1.07	2.567	0 34.1	11 32.2
29	.4956	38.67	1.2303	8 29	1.3099	172 11	0.0798	1.20	2.578	0 34.0	11 28.7
30	.4983	38.83	1.2320	8 28	1.3097	171 19	0.1256	1.33	2.589	0 33.9	11 25.2
31	0.5010	+38.99	1.2337	8 26	1.3095	170 26	0.1670	+1.47	+2.599	0 33.8	11 21.7

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1881.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ .	f .	$\log g$.	G .	$\log h$.	H .	$\log i$.	i .	f .	G .	H .
July 1	γ 0.5010	+38.99	1.2337	8 26	1.3095	170 26	0.1670	+1.47	+2.599	$\begin{smallmatrix} h & m \\ 0 & 33.8 \end{smallmatrix}$	$\begin{smallmatrix} h & m \\ 11 & 21.7 \end{smallmatrix}$
2	.5038	39.14	1.2354	8 25	1.3093	169 33	0.2045	1.60	2.609	0 33.6	11 18.2
3	.5065	39.30	1.2371	8 23	1.3090	168 41	0.2392	1.73	2.620	0 33.5	11 14.7
4	.5093	39.46	1.2388	8 21	1.3088	167 48	0.2714	1.87	2.630	0 33.4	11 11.2
5	.5120	39.61	1.2405	8 19	1.3085	166 55	0.3009	2.00	2.641	0 33.3	11 7.6
(19.0) 6	.5147	+39.77	1.2422	8 17	1.3083	166 2	0.3282	+2.13	+2.651	0 33.1	11 4.1
7	.5175	39.92	1.2438	8 15	1.3080	165 8	0.3539	2.26	2.661	0 33.0	11 0.6
8	.5202	40.07	1.2454	8 13	1.3076	164 15	0.3782	2.39	2.672	0 32.8	10 57.0
9	.5229	40.23	1.2471	8 11	1.3073	163 22	0.4011	2.52	2.682	0 32.7	10 53.5
10	.5257	40.38	1.2487	8 9	1.3069	162 29	0.4228	2.65	2.692	0 32.6	10 49.9
11	.5284	+40.53	1.2503	8 6	1.3066	161 35	0.4432	+2.77	+2.702	0 32.4	10 46.4
12	.5312	40.68	1.2518	8 4	1.3062	160 42	0.4626	2.90	2.712	0 32.2	10 42.8
13	.5339	40.83	1.2534	8 1	1.3058	159 48	0.4811	3.03	2.722	0 32.1	10 39.2
14	.5366	40.98	1.2549	7 59	1.3054	158 54	0.4987	3.15	2.732	0 31.9	10 35.6
15	.5394	41.12	1.2564	7 56	1.3050	158 1	0.5155	3.28	2.742	0 31.7	10 32.0
16	.5421	+41.27	1.2579	7 54	1.3045	157 7	0.5315	+3.40	+2.752	0 31.6	10 28.5
17	.5448	41.42	1.2594	7 51	1.3041	156 13	0.5470	3.52	2.761	0 31.4	10 24.9
18	.5476	41.56	1.2609	7 48	1.3036	155 18	0.5618	3.65	2.771	0 31.2	10 21.2
19	.5503	41.71	1.2623	7 45	1.3032	154 24	0.5759	3.77	2.781	0 31.0	10 17.6
20	.5531	41.85	1.2638	7 43	1.3027	153 29	0.5895	3.89	2.790	0 30.8	10 14.0
(20.0) 21	.5558	+41.99	1.2652	7 40	1.3022	152 35	0.6025	+4.01	+2.799	0 30.7	10 10.3
22	.5585	42.13	1.2666	7 37	1.3016	151 40	0.6151	4.12	2.809	0 30.5	10 6.7
23	.5613	42.27	1.2680	7 34	1.3011	150 45	0.6273	4.24	2.818	0 30.3	10 3.1
24	.5640	42.41	1.2693	7 31	1.3006	149 50	0.6390	4.35	2.828	0 30.1	9 59.4
25	.5667	42.54	1.2707	7 28	1.3000	148 55	0.6501	4.47	2.837	0 29.9	9 55.7
26	.5695	+42.68	1.2721	7 25	1.2994	148 0	0.6610	+4.58	+2.845	0 29.7	9 52.0
27	.5722	42.82	1.2734	7 22	1.2989	147 4	0.6715	4.69	2.854	0 29.5	9 48.4
28	.5750	42.95	1.2747	7 19	1.2983	146 9	0.6816	4.80	2.863	0 29.3	9 44.6
29	.5777	43.09	1.2760	7 16	1.2977	145 13	0.6912	4.91	2.872	0 29.1	9 40.8
30	.5804	43.22	1.2773	7 13	1.2971	144 17	0.7007	5.02	2.881	0 28.9	9 37.1
31	.5832	43.35	1.2785	7 10	1.2965	143 21	0.7098	5.13	2.889	0 28.7	9 33.4
Aug. 1	.5859	+43.48	1.2798	7 7	1.2959	142 25	0.7186	+5.23	+2.898	0 28.5	9 29.6
2	.5887	43.61	1.2810	7 4	1.2953	141 28	0.7271	5.33	2.907	0 28.3	9 25.9
3	.5914	43.73	1.2822	7 1	1.2947	140 31	0.7354	5.43	2.915	0 28.1	9 22.1
4	.5941	43.86	1.2834	6 58	1.2941	139 34	0.7433	5.54	2.924	0 27.9	9 18.3
(21.0) 5	.5969	43.98	1.2846	6 56	1.2935	138 37	0.7510	5.64	2.932	0 27.7	9 14.5
6	.5996	+44.11	1.2858	6 53	1.2928	137 40	0.7584	+5.73	+2.940	0 27.5	9 10.7
7	.6023	44.23	1.2869	6 50	1.2922	136 43	0.7656	5.83	2.948	0 27.3	9 6.9
8	.6051	44.35	1.2880	6 47	1.2916	135 46	0.7726	5.93	2.956	0 27.1	9 3.1
9	.6078	44.46	1.2892	6 44	1.2910	134 48	0.7793	6.02	2.964	0 27.0	8 59.2
10	.6106	44.58	1.2903	6 41	1.2903	133 50	0.7858	6.11	2.972	0 26.8	8 55.3
11	.6133	+44.70	1.2914	6 39	1.2897	132 52	0.7921	+6.19	+2.980	0 26.6	8 51.4
12	.6160	44.81	1.2924	6 36	1.2891	131 54	0.7982	6.28	2.988	0 26.4	8 47.5
13	.6188	44.92	1.2935	6 33	1.2884	130 55	0.8041	6.37	2.995	0 26.2	8 43.6
14	.6215	45.04	1.2945	6 31	1.2878	129 56	0.8098	6.46	3.003	0 26.1	8 39.7
15	.6242	45.15	1.2956	6 28	1.2872	128 57	0.8153	6.54	3.010	0 25.9	8 35.8
16	.6270	+45.26	1.2966	6 26	1.2866	127 58	0.8206	+6.61	+3.017	0 25.7	8 31.9
17	.6297	45.36	1.2976	6 23	1.2860	126 59	0.8258	6.69	3.024	0 25.5	8 27.9
18	.6325	45.47	1.2986	6 21	1.2854	126 0	0.8307	6.77	3.031	0 25.4	8 23.9
19	.6352	45.58	1.2996	6 18	1.2848	125 0	0.8355	6.85	3.038	0 25.2	8 20.0
20	.6379	45.68	1.3005	6 16	1.2842	124 1	0.8401	6.92	3.045	0 25.1	8 16.0
(22.0) 21	.6407	+45.79	1.3015	6 14	1.2836	123 1	0.8446	+6.98	+3.052	0 24.9	8 12.0
22	.6434	45.89	1.3024	6 12	1.2830	122 0	0.8489	7.06	3.059	0 24.8	8 8.0
23	.6462	45.99	1.3034	6 10	1.2824	121 0	0.8530	7.13	3.066	0 24.6	8 4.0
24	.6489	46.09	1.3043	6 8	1.2819	120 0	0.8569	7.19	3.073	0 24.5	8 0.0
25	.6516	46.19	1.3052	6 6	1.2814	118 59	0.8607	7.26	3.079	0 24.4	7 55.9
26	.6544	+46.29	1.3061	6 4	1.2809	117 58	0.8643	+7.32	+3.086	0 24.2	7 51.9
27	.6571	46.39	1.3070	6 2	1.2803	116 57	0.8678	7.37	3.092	0 24.1	7 47.8
28	.6598	46.48	1.3079	6 0	1.2798	115 56	0.8712	7.43	3.099	0 24.0	7 43.7
29	.6626	46.58	1.3087	5 58	1.2793	114 54	0.8744	7.48	3.105	0 23.9	7 39.5
30	.6653	46.67	1.3096	5 57	1.2788	113 52	0.8775	7.54	3.111	0 23.8	7 35.4
31	0.6681	+46.77	1.3104	5 55	1.2784	112 50	0.8803	+7.59	+3.118	0 23.7	7 31.3

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1881.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ .	f .	Log g .	g .	Log h .	h .	Log i .	i .	f .	g .	h .
Sept. 1	0.6708	+46.86	1.3113	5 54	1.2780	111° 49'	0.8831	+7.64	+3.124	0 23.6	7 27.2
2	.6735	46.95	1.3121	5 53	1.2775	110 47	0.8857	7.69	3.130	0 23.5	7 23.1
3	.6763	47.04	1.3129	5 52	1.2771	109 44	0.8882	7.73	3.136	0 23.4	7 18.9
4	.6790	47.13	1.3138	5 50	1.2767	108 42	0.8906	7.77	3.142	0 23.3	7 14.8
5	.6817	47.22	1.3146	5 49	1.2763	107 40	0.8928	7.81	3.148	0 23.3	7 10.6
6	.6845	+47.31	1.3154	5 48	1.2760	106 37	0.8949	+7.85	+3.154	0 23.2	7 6.4
7	.6872	47.39	1.3161	5 48	1.2757	105 34	0.8969	7.89	3.160	0 23.2	7 2.2
8	.6899	47.48	1.3169	5 47	1.2754	104 31	0.8988	7.92	3.166	0 23.2	6 58.1
9	.6927	47.57	1.3177	5 46	1.2751	103 28	0.9003	7.95	3.171	0 23.1	6 53.9
10	.6954	47.65	1.3185	5 46	1.2748	102 25	0.9019	7.98	3.177	0 23.1	6 49.7
11	.6982	+47.74	1.3193	5 46	1.2745	101 22	0.9033	+8.00	+3.183	0 23.1	6 45.4
12	.7009	47.82	1.3200	5 45	1.2742	100 18	0.9046	8.03	3.188	0 23.0	6 41.2
13	.7036	47.91	1.3208	5 45	1.2740	99 15	0.9058	8.05	3.194	0 23.0	6 37.0
14	.7064	47.99	1.3215	5 45	1.2738	98 11	0.9068	8.07	3.200	0 23.0	6 32.8
15	.7091	48.07	1.3223	5 45	1.2737	97 8	0.9077	8.08	3.205	0 23.0	6 28.5
16	.7118	+48.16	1.3231	5 45	1.2736	96 4	0.9085	+8.10	+3.211	0 23.0	6 24.3
17	.7146	48.24	1.3238	5 45	1.2735	95 0	0.9092	8.11	3.216	0 23.0	6 20.0
18	.7173	48.32	1.3246	5 45	1.2734	93 56	0.9097	8.12	3.222	0 23.0	6 15.8
19	.7201	48.40	1.3253	5 46	1.2733	92 52	0.9101	8.13	3.227	0 23.0	6 11.5
20	.7228	48.49	1.3260	5 46	1.2732	91 48	0.9104	8.14	3.233	0 23.1	6 7.2
21	.7255	+48.57	1.3268	5 47	1.2731	90 44	0.9105	+8.14	+3.238	0 23.1	6 3.0
22	.7283	48.65	1.3275	5 48	1.2731	89 40	0.9106	8.14	3.244	0 23.2	5 58.7
23	.7310	48.73	1.3283	5 48	1.2731	88 36	0.9105	8.14	3.249	0 23.2	5 54.4
24	.7338	48.81	1.3290	5 49	1.2732	87 32	0.9103	8.14	3.255	0 23.3	5 50.1
25	.7365	48.89	1.3297	5 50	1.2732	86 28	0.9099	8.13	3.260	0 23.3	5 45.9
26	.7392	+48.98	1.3305	5 51	1.2733	85 23	0.9094	+8.12	+3.265	0 23.4	5 41.6
27	.7420	49.06	1.3312	5 52	1.2734	84 19	0.9088	8.11	3.271	0 23.5	5 37.3
28	.7447	49.14	1.3320	5 53	1.2735	83 15	0.9080	8.09	3.276	0 23.5	5 33.0
29	.7474	49.23	1.3327	5 55	1.2737	82 11	0.9071	8.07	3.282	0 23.6	5 28.7
30	.7502	49.31	1.3335	5 56	1.2739	81 7	0.9062	8.05	3.288	0 23.7	5 24.5
Oct. 1	.7529	+49.39	1.3343	5 58	1.2741	80 2	0.9050	+8.03	+3.293	0 23.8	5 20.2
2	.7557	49.48	1.3350	6 0	1.2744	78 58	0.9038	8.01	3.299	0 24.0	5 15.9
3	.7584	49.56	1.3358	6 1	1.2746	77 54	0.9024	7.99	3.304	0 24.2	5 11.7
4	.7611	49.65	1.3366	6 3	1.2749	76 50	0.9008	7.96	3.310	0 24.3	5 7.4
5	.7639	49.73	1.3373	6 5	1.2752	75 46	0.8992	7.93	3.316	0 24.4	5 3.1
6	.7666	+49.82	1.3381	6 7	1.2755	74 42	0.8974	+7.90	+3.321	0 24.5	4 58.9
7	.7694	49.90	1.3389	6 9	1.2758	73 39	0.8954	7.86	3.327	0 24.6	4 54.6
8	.7721	49.99	1.3397	6 11	1.2762	72 35	0.8932	7.82	3.333	0 24.8	4 50.3
9	.7748	50.08	1.3405	6 14	1.2766	71 31	0.8911	7.78	3.339	0 25.0	4 46.1
10	.7776	50.17	1.3413	6 16	1.2770	70 28	0.8887	7.74	3.345	0 25.1	4 41.8
11	.7803	+50.26	1.3421	6 18	1.2774	69 24	0.8862	+7.69	+3.351	0 25.3	4 37.6
12	.7830	50.35	1.3429	6 21	1.2778	68 20	0.8836	7.65	3.357	0 25.4	4 33.4
13	.7858	50.44	1.3438	6 23	1.2783	67 17	0.8808	7.60	3.363	0 25.6	4 29.1
14	.7885	50.54	1.3446	6 26	1.2787	66 14	0.8778	7.55	3.369	0 25.8	4 24.9
15	.7912	50.63	1.3454	6 28	1.2792	65 11	0.8747	7.49	3.375	0 25.9	4 20.7
16	.7940	+50.72	1.3463	6 31	1.2797	64 8	0.8714	+7.44	+3.381	0 26.1	4 16.5
17	.7967	50.81	1.3471	6 34	1.2802	63 5	0.8679	7.38	3.387	0 26.3	4 12.3
18	.7995	50.91	1.3480	6 36	1.2808	62 2	0.8643	7.32	3.394	0 26.5	4 8.1
19	.8022	51.01	1.3489	6 39	1.2814	60 59	0.8606	7.25	3.400	0 26.6	4 3.9
20	.8049	51.11	1.3497	6 42	1.2819	59 57	0.8566	7.19	3.407	0 26.8	3 59.7
21	.8077	+51.21	1.3506	6 45	1.2825	58 54	0.8525	+7.12	+3.414	0 27.0	3 55.6
22	.8104	51.31	1.3515	6 48	1.2831	57 52	0.8482	7.05	3.420	0 27.2	3 51.4
23	.8132	51.41	1.3524	6 51	1.2836	56 49	0.8438	6.98	3.427	0 27.4	3 47.2
24	.8159	51.51	1.3533	6 54	1.2842	55 47	0.8392	6.90	3.434	0 27.6	3 43.1
25	.8186	51.62	1.3543	6 57	1.2849	54 45	0.8344	6.83	3.441	0 27.8	3 39.0
26	.8214	51.73	1.3552	7 0	1.2855	53 43	0.8294	6.75	3.448	0 28.0	3 34.9
27	.8241	+51.83	1.3562	7 3	1.2861	52 42	0.8242	+6.67	+3.456	0 28.2	3 30.7
28	.8268	51.94	1.3571	7 6	1.2867	51 40	0.8188	6.59	3.463	0 28.4	3 26.6
29	.8296	52.05	1.3581	7 9	1.2873	50 39	0.8132	6.50	3.471	0 28.6	3 22.6
30	.8323	52.16	1.3591	7 12	1.2880	49 38	0.8074	6.42	3.478	0 28.8	3 18.6
31	.8351	52.28	1.3601	7 16	1.2886	48 37	0.8013	6.33	3.485	0 29.0	3 14.5
32	0.8378	+52.39	1.3611	7 19	1.2893	47 36	0.7950	+6.24	+3.493	0 29.3	3 10.4

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1881.0, TO APPARENT PLACES.

Solar day. Std. hour.	τ .	f .	Log g .	G .	Log h .	H .	Log i .	i .	f .	G .	H .
Nov. 1	0.8378	+52.39	1.3611	7 19	1.2893	47 36	0.7950	+6.24	+3.493	0 29.3	3 10.4
2	.8405	52.51	1.3621	7 22	1.2899	46 35	0.7886	6.15	3.501	0 29.5	3 6.4
3	.8433	52.63	1.3631	7 25	1.2906	45 35	0.7819	6.05	3.508	0 29.7	3 2.3
h (3.0) 4	.8460	52.74	1.3641	7 28	1.2913	44 34	0.7749	5.96	3.516	0 29.9	2 58.3
5	.8488	52.86	1.3652	7 31	1.2919	43 34	0.7677	5.86	3.524	0 30.1	2 54.3
6	.8515	+52.98	1.3662	7 34	1.2926	42 34	0.7602	+5.76	+3.532	0 30.3	2 50.2
7	.8542	53.10	1.3673	7 37	1.2933	41 34	0.7525	5.66	3.540	0 30.5	2 46.2
8	.8570	53.23	1.3683	7 40	1.2939	40 34	0.7445	5.55	3.548	0 30.7	2 42.3
9	.8597	53.36	1.3694	7 43	1.2946	39 34	0.7362	5.45	3.557	0 30.9	2 38.3
10	.8624	53.48	1.3705	7 46	1.2952	38 35	0.7275	5.34	3.565	0 31.1	2 34.3
11	.8652	+53.61	1.3716	7 49	1.2959	37 35	0.7186	+5.23	+3.574	0 31.3	2 30.3
12	.8679	53.74	1.3727	7 53	1.2965	36 36	0.7093	5.12	3.583	0 31.5	2 26.4
13	.8707	53.87	1.3738	7 55	1.2971	35 37	0.6997	5.01	3.591	0 31.7	2 22.4
14	.8734	54.00	1.3749	7 57	1.2977	34 38	0.6896	4.89	3.600	0 31.8	2 18.5
-15	.8761	54.14	1.3760	8 0	1.2984	33 40	0.6793	4.78	3.609	0 32.0	2 14.6
16	.8789	+54.27	1.3772	8 2	1.2990	32 41	0.6685	+4.66	+3.618	0 32.2	2 10.7
17	.8816	54.41	1.3783	8 5	1.2996	31 42	0.6574	4.54	3.627	0 32.4	2 6.8
18	.8843	54.55	1.3795	8 8	1.3001	30 44	0.6459	4.43	3.636	0 32.5	2 2.9
h (4.0) 19	.8871	54.69	1.3806	8 10	1.3007	29 46	0.6339	4.31	3.646	0 32.7	1 59.0
20	.8898	54.83	1.3818	8 12	1.3013	28 47	0.6213	4.18	3.656	0 32.9	1 55.1
21	.8926	+54.97	1.3830	8 15	1.3018	27 49	0.6081	+4.06	+3.665	0 33.0	1 51.3
22	.8953	55.11	1.3842	8 17	1.3024	26 51	0.5950	3.94	3.675	0 33.2	1 47.4
23	.8980	55.26	1.3854	8 19	1.3029	25 53	0.5803	3.80	3.684	0 33.3	1 43.6
24	.9008	55.40	1.3865	8 21	1.3034	24 56	0.5655	3.68	3.694	0 33.5	1 39.7
25	.9035	55.55	1.3877	8 23	1.3039	23 58	0.5501	3.55	3.704	0 33.6	1 35.9
26	.9062	+55.71	1.3889	8 25	1.3044	23 1	0.5338	+3.42	+3.714	0 33.7	1 32.1
27	.9090	55.86	1.3901	8 27	1.3049	22 3	0.5168	3.29	3.724	0 33.9	1 28.3
28	.9117	56.01	1.3913	8 29	1.3053	21 6	0.4991	3.16	3.734	0 34.0	1 24.4
29	.9145	56.16	1.3925	8 31	1.3058	20 9	0.4809	3.03	3.744	0 34.1	1 20.6
30	.9172	56.31	1.3938	8 32	1.3062	19 12	0.4607	2.89	3.754	0 34.2	1 16.8
Dec. 1	.9199	+56.46	1.3950	8 34	1.3066	18 15	0.4399	+2.75	+3.764	0 34.3	1 13.0
2	.9227	56.62	1.3962	8 35	1.3070	17 18	0.4179	2.62	3.775	0 34.3	1 9.2
3	.9254	56.77	1.3974	8 36	1.3074	16 21	0.3945	2.48	3.785	0 34.4	1 5.4
h (5.0) 4	.9281	56.93	1.3986	8 38	1.3077	15 25	0.3697	2.34	3.796	0 34.5	1 1.7
5	.9309	57.09	1.3999	8 39	1.3080	14 29	0.3432	2.15	3.806	0 34.6	0 57.9
6	.9336	+57.25	1.4011	8 40	1.3083	13 32	0.3149	+2.06	+3.817	0 34.6	0 54.1
7	.9364	57.41	1.4023	8 41	1.3086	12 34	0.2844	1.92	3.827	0 34.7	0 50.3
8	.9391	57.57	1.4035	8 42	1.3089	11 39	0.2514	1.78	3.838	0 34.8	0 46.6
9	.9418	57.73	1.4048	8 42	1.3092	10 43	0.2156	1.64	3.848	0 34.8	0 42.8
10	.9446	57.89	1.4060	8 43	1.3094	9 47	0.1764	1.50	3.859	0 34.9	0 39.1
11	.9473	+58.05	1.4072	8 44	1.3096	8 50	0.1329	+1.36	+3.870	0 34.9	0 35.3
12	.9501	58.22	1.4084	8 44	1.3098	7 54	0.0846	1.21	3.881	0 34.9	0 31.6
13	.9528	58.38	1.4097	8 45	1.3100	6 58	0.0301	1.07	3.892	0 35.0	0 27.8
14	.9555	58.54	1.4109	8 45	1.3101	6 2	9.9675	0.93	3.903	0 35.0	0 24.1
15	.9583	58.71	1.4121	8 45	1.3102	5 5	9.8942	0.78	3.914	0 35.0	0 20.3
16	.9610	+58.88	1.4132	8 45	1.3103	4 9	9.8055	+0.64	+3.925	0 35.0	0 16.6
17	.9637	59.04	1.4145	8 45	1.3104	3 13	9.6933	0.49	3.936	0 35.0	0 12.8
18	.9665	59.20	1.4157	8 45	1.3105	2 17	9.5408	0.35	3.947	0 35.0	0 9.1
h (6.0) 19	.9692	59.37	1.4169	8 45	1.3105	1 21	9.2977	0.20	3.958	0 35.0	0 5.4
20	.9720	59.53	1.4181	8 45	1.3106	0 25	8.7782	+0.06	3.969	0 35.0	0 1.6
21	.9747	+59.70	1.4193	8 44	1.3106	359 29	8.9030	-0.08	+3.980	0 35.0	23 57.9
22	.9774	59.86	1.4205	8 44	1.3106	358 33	9.3617	0.23	3.991	0 34.9	23 54.2
23	.9802	60.03	1.4217	8 43	1.3105	357 37	9.5682	0.37	4.002	0 34.9	23 50.4
24	.9829	60.19	1.4229	8 43	1.3105	356 41	9.7076	0.51	4.013	0 34.9	23 46.7
25	.9856	60.36	1.4241	8 42	1.3104	355 45	9.8160	0.65	4.024	0 34.8	23 42.9
26	.9884	60.52	1.4252	8 41	1.3103	354 48	9.9028	0.80	4.035	0 34.8	23 39.2
27	.9911	+60.68	1.4264	8 40	1.3102	353 52	9.9749	-0.94	+4.046	0 34.7	23 35.4
28	.9939	60.85	1.4275	8 39	1.3100	352 56	0.0367	1.09	4.057	0 34.6	23 31.7
29	.9966	61.01	1.4286	8 38	1.3098	352 0	0.0905	1.23	4.068	0 34.6	23 27.9
30	0.9993	61.17	1.4298	8 37	1.3096	351 3	0.1383	1.37	4.079	0 34.5	23 24.2
31	1.0021	61.33	1.4310	8 36	1.3094	350 7	0.1817	1.52	4.080	0 34.4	23 20.4
32	1.0048	+61.50	1.4311	8 35	1.3092	349 11	0.2201	-1.66	+4.100	0 34.3	23 16.7

BESSEL'S FORMULÆ OF REDUCTION FOR THE FIXED STARS,

WITH DR. PETERS'S COEFFICIENTS, AND BESSEL'S NOTATION.

$$A = \tau - 0.34246 \sin \Omega + 0.00410 \sin 2 \Omega - 0.02519 \sin 2 \odot + 0.00293 \sin (\odot + 82^\circ 11')$$

$$B = -9''.2238 \cos \Omega + 0''.0895 \cos 2 \Omega - 0''.5506 \cos 2 \odot - 0''.0092 \cos (\odot + 280^\circ 53')$$

$$C = -20''.4451 \cos \omega \cos \odot$$

$$D = -20''.4451 \sin \odot$$

$$E = -0''.0462 \sin \Omega + 0''.0014 \sin 2 \Omega - 0''.0033 \sin 2 \odot$$

$$a = 3''.07236 + 1''.33691 \sin \alpha \tan \delta$$

$$b = \frac{1}{15} \cos \alpha \tan \delta$$

$$c = \frac{1}{15} \cos \alpha \sec \delta$$

$$d = \frac{1}{15} \sin \alpha \sec \delta$$

$$a' = 20''.0537 \cos \alpha$$

$$b' = -\sin \alpha$$

$$c' = \tan \omega \cos \delta - \sin \alpha \sin \delta$$

$$d' = \cos \alpha \sin \delta$$

μ = the annual proper motion in right ascension.

μ' = the annual proper motion in declination.

τ = the time reckoned from Jan. 0^d .500, (when the sun's mean longitude is 280°), expressed in fractional parts of a tropical year.

\odot = the sun's true longitude.

Ω = the longitude of the moon's ascending node.

ω = the obliquity of the ecliptic.

α = the star's mean right ascension for the beginning of the year.

δ = the star's mean declination for the beginning of the year.

α' = the star's apparent right ascension at the time τ

δ' = the star's apparent declination at the time τ

$$\alpha' - \alpha = A a + B b + C c + D d + E + \tau \mu \quad (\text{in time})$$

$$\delta' - \delta = A a' + B b' + C c' + D d' + \tau \mu' \quad (\text{in arc})$$

The following formulæ may also be used by putting

$$f = 46''.0854 A + E = 3''.07236 A + \frac{1}{15} E \quad i = C \tan \omega$$

$$g \cos G = 20''.0537 A \quad h \sin H = C$$

$$g \sin G = B \quad h \cos H = D$$

$$\alpha' - \alpha = f + \tau \mu + g \sin (G + \alpha) \frac{\tan \delta}{15} + h \sin (H + \alpha) \frac{\sec \delta}{15} \quad (\text{in time})$$

$$\delta' - \delta = \tau \mu' + g \cos (G + \alpha) + h \cos (H + \alpha) \sin \delta + i \cos \delta \quad (\text{in arc})$$

A and B include also the following small terms of nutation:—

$$\begin{aligned} \Delta A = & +.00025 \sin (2 \odot - \Omega) + .00009 \sin (2 \Gamma' - \Omega) & \Delta B = & +0''.0067 \cos (2 \odot - \Omega) \\ & +.00010 \sin 2 (\odot - \Gamma') + .00005 \cos \Gamma' & & -0.0027 \cos (3 \odot - \Gamma) \\ & -.00005 \sin 2 (\odot - \Omega) + .00004 \sin 2 \Gamma' & & +0.0024 \cos (2 \Gamma' - \Omega) \\ & -.00011 \sin (3 \odot - \Gamma) & & -0.0023 \sin \Gamma' \\ & & & +0.0008 \sin 2 \Gamma' \end{aligned}$$

MEAN PLACES FOR 1881.0. (Jan. 0—^d.500, Washington.)

Star's Name.	Magni- tude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
α Andromedæ . . .	2	^h 0 ^m 2 ^s 14.300	+3.0899	+28° 26' 0.11"	+19.886
γ Pegasi (<i>Algenib</i>) . .	3.2	0 7 6.538	3.0829	+14 31 18.83	20.026
β Hydri	3	0 19 28.412	3.2441	—77 55 28.38	20.268
12 Ceti	6	0 23 57.939	3.0610	— 4 36 53.93	19.942
α Cassiopeæ	var.	0 33 45.706	3.3691	+55 53 3.90	19.796
β Ceti	2	0 37 36.962	+3.0148	—18 38 24.37	+19.809
21 Cassiopeæ	6	0 37 48.560	3.8439	+74 20 14.26	19.760
ϵ Piscium	4	0 56 46.060	3.1084	+ 7 14 56.74	19.465
β Andromedæ	2.3	1 3 4.337	3.3419	+34 59 21.18	19.177
α Ursæ Min. (<i>Polaris</i>)	2	1 15 8.148	21.804	+88 40 27.96	18.986
θ^1 Ceti	3	1 18 4.516	+2.9969	— 8 47 52.22	+18.681
38 Cassiopeæ	6.7	1 22 23.580	4.3656	+69 39 5.11	18.696
η Piscium	4.3	1 25 7.006	3.2014	+14 43 54.75	18.679
α Eridani (<i>Achernar</i>)	1	1 33 16.599	2.2334	—57 50 30.07	18.368
ν Piscium	4.5	1 39 6.639	3.1613	+ 8 33 29.25	18.234
β Arietis	3	1 48 4.063	+3.3020	+20 13 32.46	+17.747
50 Cassiopeæ	4	1 53 17.808	4.9953	+71 50 39.96	17.676
α Arietis	2	2 0 28.015	3.3693	+22 53 56.38	17.195
ξ^1 Ceti	4.5	2 6 41.624	3.1731	+ 8 17 15.90	17.051
ι Cassiopeæ	4	2 19 16.437	4.8512	+66 51 58.15	16.468
ξ^2 Ceti	4	2 21 49.989	+3.1827	+ 7 55 32.98	+16.318
γ Ceti	3.4	2 37 8.100	3.1025	+ 2 44 0.40	15.364
α Ceti	2.3	2 56 3.569	3.1295	+ 3 37 18.96	14.336
48 Cephei (H.) . . .	6.7	3 5 16.162	7.3769	+77 17 42.12	13.798
ζ Arietis	5.4	3 8 3.767	3.4379	+20 36 8.45	13.588
α Persei	2	3 15 49.960	+4.2534	+49 26 10.31	+13.134
ϵ Eridani	3	3 27 19.449	2.8231	— 9 51 42.65	12.421
δ Persei	3.4	3 34 27.416	4.2465	+47 24 19.70	11.853
η Tauri	3	3 40 24.704	3.5554	+23 44 9.12	11.417
ζ Persei	3	3 46 39.220	3.7584	+31 31 43.58	10.989
γ^1 Eridani	3	3 52 28.685	+2.7982	—13 50 53.08	+10.476
γ Tauri	4	4 13 1.332	3.4080	+15 20 20.29	8.997
ϵ Tauri	4.3	4 21 40.115	3.4964	+18 54 54.32	8.298
α Tauri (<i>Aldebaran</i>) .	1	4 29 5.580	3.4364	+16 16 7.21	7.556
α Camelopardalis . .	5.4	4 42 13.515	5.9193	+66 8 16.92	6.674
ι Aurigæ	3	4 49 14.714	+3.8995	+32 58 33.81	+ 6.072
11 Orionis	5	4 57 46.162	3.4236	+15 14 12.82	5.340
α Aurigæ (<i>Capella</i>) .	1	5 7 53.973	4.4234	+45 52 30.18	4.085
β Orionis (<i>Rigel</i>) . .	1	5 8 49.148	2.8810	— 8 20 25.27	4.435
β Tauri	2	5 18 46.195	3.7885	+28 30 19.03	3.408
Groombridge 966 . .	6.7	5 23 49.575	+7.9944	+74 57 41.64	+ 3.171
δ Orionis	2	5 25 55.640	3.0630	— 0 23 18.84	2.965
α Leporis	3	5 27 28.916	2.6445	—17 54 30.98	2.835
ϵ Orionis	2	5 30 10.513	3.0420	— 1 16 45.25	2.603
α Columbæ	2	5 35 20.459	2.1725	—34 8 18.51	2.109
α Orionis	1	5 48 43.763	3.2468	+ 7 23 0.39	+ 0.992
ν Orionis	5.4	6 0 46.698	+3.4272	+14 46 52.23	— 0.098
22 Camelopardalis (H.)	5.4	6 5 43.643	6.6181	+69 21 31.54	0.619
μ Geminorum	3	6 15 45.690	3.6315	+22 34 23.02	1.500
α Argus (<i>Canopus</i>) . .	1	6 21 18.713	1.3303	—52 37 51.92	1.853
γ Geminorum	2.3	6 30 50.235	3.4675	+16 29 57.75	2.737
* α Canis Majoris (<i>Sirius</i>)	1	6 39 54.266	+2.6437	—16 33 14.44	— 4.681

* Periodic corrections given in the Appendix are still to be applied to the position of Sirius.

MEAN PLACES FOR 1881.0. (Jan. 0— ^d .500, Washington.)					
Star's Name.	Magni- tude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		^h ^m ^s	^s	[°] ['] ["]	["]
51 Cephei (H.) . . .	5	6 44 15.445	+30.103	+87 13 41.48	— 3.941
ε Canis Majoris . . .	2.1	6 53 56.970	2.3576	—28 48 40.21	4.690
δ Canis Majoris . . .	2	7 3 33.170	2.4384	—26 12 18.63	5.480
δ Geminorum . . .	3.4	7 13 0.926	3.5885	+22 11 59.90	6.297
Piazzii vii. 67 . . .	6	7 18 29.271	6.3058	+68 42 22.63	6.772
α Geminorum (<i>Castor</i>)	2.1	7 27 0.382	+ 3.8396	+32 8 52.94	— 7.510
* α Canis Min. (<i>Procyon</i>)	1	7 33 4.329	3.1439	+ 5 31 43.56	8.959
β Geminorum (<i>Pollux</i>)	1.2	7 38 1.978	3.6803	+28 18 44.03	8.376
φ Geminorum . . .	5	7 46 12.800	3.6810	+27 4 20.89	8.989
3 Ursæ Majoris (H.) .	5.6	8 0 57.349	6.0591	+68 49 19.75	10.097
15 Argus (ι) . . .	3	8 2 28.580	+ 2.5543	—23 57 43.67	—10.169
η Cancrī . . .	6.5	8 25 49.585	3.4794	+20 50 39.36	11.970
ε Hydræ . . .	3.4	8 40 28.430	3.1824	+ 6 51 15.80	12.976
ι Ursæ Majoris . . .	3	8 51 3.251	4.1371	+48 30 27.74	13.869
σ ³ Ursæ Majoris . . .	5	8 59 54.272	5.3661	+67 36 58.05	14.230
κ Cancrī . . .	5	9 1 18.084	+ 3.2566	+11 8 46.39	—14.264
ι Argus . . .	2	9 13 54.163	1.6013	—58 46 33.66	14.985
1 Draconis (H.) . . .	4.5	9 20 0.496	9.0654	+81 51 0.70	15.381
α Hydræ . . .	2	9 21 44.382	2.9492	— 8 8 36.83	15.430
d Ursæ Majoris . . .	5.4	9 23 56.056	5.4152	+70 21 7.21	15.521
θ Ursæ Majoris . . .	3	9 24 53.408	+ 4.0457	+52 13 7.18	—16.189
ε Leonis . . .	3	9 39 5.690	3.4166	+24 19 17.04	16.403
μ Leonis . . .	4	9 45 59.635	3.4237	+26 34 0.01	16.775
α Leonis (<i>Regulus</i>) .	1.2	10 2 2.020	3.2014	+12 32 53.56	17.457
32 Ursæ Majoris . . .	6	10 9 22.619	4.4304	+65 42 3.92	17.788
γ ¹ Leonis . . .	3	10 13 24.631	+ 3.3161	+20 26 34.47	—18.069
9 Draconis (H.) . . .	5.4	10 24 56.802	5.2862	+76 19 30.56	18.370
ρ Leonis . . .	4	10 26 32.703	3.1649	+ 9 55 6.39	18.418
η Argus . . .	var.	10 40 26.776	2.3116	—59 3 32.91	18.862
ι Leonis . . .	5.6	10 43 0.115	3.1591	+11 10 28.13	18.961
α Ursæ Majoris . . .	2	10 56 22.384	+ 3.7544	+62 23 35.22	—19.352
δ Leonis . . .	2.3	11 7 46.712	3.1993	+21 10 31.55	19.678
δ Crateris . . .	3.4	11 13 23.529	2.9958	—14 8 5.46	19.457
τ Leonis . . .	5	11 21 49.038	3.0863	+ 3 30 41.17	19.797
λ Draconis . . .	3.4	11 24 19.366	3.6307	+69 59 15.66	19.832
υ Leonis . . .	5	11 30 51.361	+ 3.0712	— 0 10 0.87	—19.857
β Leonis . . .	2	11 42 59.353	3.0646	+15 14 13.92	20.118
γ Ursæ Majoris . . .	2.3	11 47 34.012	3.1854	+54 21 22.70	20.026
υ Virginis . . .	4	11 59 8.820	3.0578	+ 9 23 38.27	20.016
4 Draconis (H.) . . .	5.4	12 6 36.774	2.8964	+78 16 39.19	20.024
γ Corvi . . .	2	12 9 41.254	+ 3.0786	—16 52 52.03	—20.020
β Chamæleontis . . .	5	12 11 22.763	3.3580	—78 39 4.21	19.986
η Virginis . . .	3.4	12 13 49.083	3.0684	— 0 0 19.52	20.045
α ¹ Crucis . . .	1	12 19 58.649	3.2719	—62 26 21.88	20.019
β Corvi . . .	2.3	12 28 8.279	3.1403	—22 44 18.57	19.968
κ Draconis . . .	3.4	12 28 23.880	2.5964	+70 26 39.47	19.894
32 Camelop. (H.) (<i>foli.</i>)	5.4	12 48 15.999	+ 0.3745	+84 3 35.14	—19.598
α Canum Venaticorum	3.2	12 50 27.616	2.8167	+38 57 40.58	19.521
θ Virginis . . .	4.5	13 3 47.343	3.1005	— 4 54 12.06	19.323
α Virginis (<i>Spica</i>) .	1	13 18 55.487	3.1526	—10 32 23.20	18.914
ζ Virginis . . .	3.4	13 28 37.800	3.0526	+ 0 0 46.81	18.533
η Ursæ Majoris . . .	2	13 42 51.066	+ 2.3721	+49 54 27.22	—18.093

* Periodic corrections given in the Appendix are still to be applied to the position of Procyon.

MEAN PLACES FOR 1881.0. (Jan. 0—^a.500, Washington.)

Star's Name.	Magni- tude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		^h ^m ^s	^s	[°] ['] ["]	["]
η Bootis	3	13 49 1.127	+ 2.8568	+ 18 59 41.25	- 18.188
β Centauri	1	13 55 26.082	+ 4.1707	- 59 47 52.89	17 617
α Draconis	3.4	14 1 10.118	+ 1.6234	+ 64 56 41.45	17.310
α Bootis (<i>Arcturus</i>)	1	14 10 14.041	+ 2.7347	+ 19 48 9.13	18.902
θ Bootis	4	14 21 8.786	+ 2.0443	+ 52 24 4.42	16.777
ρ Bootis	4.3	14 26 42.134	+ 2.5879	+ 30 53 39.71	- 15.981
δ Ursæ Minoris	5.4	14 27 47.553	- 0.2003	+ 76 13 29.95	16.011
α^2 Centauri	1	14 31 32.656	+ 4.0398	- 60 20 44.11	15.404
ϵ Bootis	2.3	14 39 47.450	+ 2.6213	+ 27 34 35.61	15.363
α^3 Libræ	2.3	14 44 17.782	+ 3.3083	- 15 32 46.90	15.196
β Ursæ Minoris	2	14 51 3.941	- 0.2396	+ 74 38 30.51	- 14.718
β Bootis	3	14 57 27.837	+ 2.2601	+ 40 51 37.94	14.381
β Libræ	2	15 10 36.262	+ 3.2208	- 8 56 34.30	13.540
μ^1 Bootis	4	15 19 59.722	+ 2.2661	+ 37 47 42.86	12.802
γ^2 Ursæ Minoris	3	15 20 55.640	- 0.1398	+ 72 15 26.76	12.810
α Coronæ Borealis	2	15 29 39.002	+ 2.5390	+ 27 6 57.51	- 12.332
α Serpentis	2.3	15 38 24.424	+ 2.9511	+ 6 48 3.32	11.582
ϵ Serpentis	3.4	15 44 53.087	+ 2.9866	+ 4 50 13.07	11.082
ζ Ursæ Minoris	4.5	15 48 20.276	- 2.2684	+ 78 9 35.43	10.899
ϵ Coronæ Borealis	4	15 52 39.727	+ 2.4830	+ 27 13 23.86	10.639
δ Scorpii	2.3	15 53 17.921	+ 3.5374	- 22 16 54.12	- 10.567
β^1 Scorpii	2	15 58 31.149	+ 3.4796	- 19 28 42.50	10.177
Groombridge 2320	6.5	16 5 59.939	+ 0.1364	+ 68 7 25.63	9.500
δ Ophiuchi	3	16 8 6.609	+ 3.1390	- 3 23 12.35	9.550
τ Herculis	3.4	16 16 9.881	+ 1.8006	+ 46 35 50.22	8.755
α Scorpii (<i>Antares</i>)	1.2	16 22 6.741	+ 3.6689	- 26 9 59.33	- 8.344
η Draconis	3.2	16 22 23.004	+ 0.8048	+ 61 47 1.71	8.231
β Herculis	2.3	16 25 6.280	+ 2.5772	+ 21 44 59.63	8.087
Λ Draconis	5	16 28 13.404	- 0.1384	+ 69 1 31.51	7.797
ζ Ophiuchi	3.2	16 30 36.414	+ 3.2983	- 10 19 29.26	7.603
α Trianguli Australis	2	16 36 4.661	+ 6.2924	- 68 48 23.17	- 7.236
η Herculis	3.4	16 38 48.981	+ 2.0535	+ 39 8 57.57	7.046
κ Ophiuchi	3.4	16 52 2.169	+ 2.8371	+ 9 33 40.19	5.866
δ Herculis	5	16 57 12.784	+ 2.2110	+ 33 44 29.16	5.423
ϵ Ursæ Minoris	4.5	16 58 12.705	- 6.3577	+ 82 13 50.59	5.344
α^1 Herculis	var.	17 9 13.305	+ 2.7332	+ 14 31 37.41	- 4.381
δ Ophiuchi	5	17 19 6.213	+ 3.6584	- 24 3 51.28	3.691
β Draconis	3.2	17 27 44.692	+ 1.3530	+ 52 23 23.65	2.814
α Ophiuchi	2	17 29 24.654	+ 2.7825	+ 12 38 51.93	2.906
ω Draconis	5	17 37 38.990	- 0.3547	+ 68 48 45.98	1.629
μ Herculis	3.4	17 41 48.123	+ 2.3460	+ 27 47 28.01	- 2.350
ψ^1 Draconis	4.5	17 44 3.396	- 1.0807	+ 72 12 24.27	1.667
γ Draconis	2.3	17 53 50.592	+ 1.3912	+ 51 30 12.00	0.569
γ^2 Sagittarii	3.4	17 58 9.824	+ 3.8513	- 30 25 25.91	- 0.379
μ Sagittarii	4	18 6 38.818	+ 3.5865	- 21 5 18.28	+ 0.569
δ Ursæ Minoris	4.5	18 10 42.733	- 19.443	+ 86 36 34.02	0.988
η Serpentis	3	18 15 9.156	+ 3.1021	- 2 55 41.69	+ 0.651
σ Octantis	6	18 26 19.147	+ 108.103	- 89 16 27.93	2.279
1 Aquilæ (3 H. Scuti)	4.5	18 28 43.891	+ 3.2645	- 8 19 33.63	2.178
α Lyræ (<i>Vega</i>)	1	18 32 54.584	+ 2.0312	+ 38 40 24.96	3.143
β Lyræ	var.	18 45 41.210	+ 2.2141	+ 33 13 30.87	3.954
σ Sagittarii	2.3	18 47 53.172	+ 3.7221	- 26 26 34.63	+ 4.082

MEAN PLACES FOR 1881.0. (Jan. 0—^a.500, Washington.)

Star's Name.	Magni- tude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
50 Draconis	6	^h 18 ^m 50 ^s 12.210	— 1.9034	+ 75° 17' 34".32	+ 4.432
ζ Aquilæ	3	18 59 56.453	+ 2.7568	+ 13 41 15.43	5.062
δ Sagittarii	5	19 10 40.313	+ 3.5128	— 19 9 47.77	6.069
δ Draconis	3	19 12 31.466	+ 0.0315	+ 67 27 8.00	6.326
τ Draconis	5.4	19 17 50.053	— 1.1120	+ 73 8 2.82	6.789
δ Aquilæ	3.4	19 19 29.900	+ 3.0254	+ 2 52 43.08	+ 6.894
κ Aquilæ	5	19 30 29.342	+ 3.2293	— 7 17 26.87	7.715
γ Aquilæ	3	19 40 36.139	+ 2.8523	+ 10 19 27.32	8.514
λ Ursæ Minoris . . .	6.7	19 43 8.416	— 62.441	+ 88 56 45.34	8.734
α Aquilæ (<i>Altair</i>) . .	1.2	19 44 58.638	+ 2.9278	+ 8 33 18.11	9.238
ε Draconis	4.3	19 48 34.053	— 0.1756	+ 69 57 53.44	+ 9.176
β Aquilæ	4	19 49 28.078	+ 2.9472	+ 6 6 37.75	8.727
τ Aquilæ	6	19 58 19.632	+ 2.9333	+ 6 56 34.95	9.907
α ³ Capricorni	3	20 11 27.089	+ 3.3329	— 12 54 45.21	10.882
κ Cephei	4.5	20 12 52.208	— 1.9092	+ 77 21 8.56	11.014
α Pavonis	2	20 16 13.902	+ 4.7891	— 57 6 52.39	+ 11.140
γ Cygni	2.3	20 17 57.555	+ 2.1536	+ 39 52 34.86	11.521
π Capricorni	5	20 20 30.552	+ 3.4406	— 18 36 2.60	11.521
ε Delphini	4	20 27 31.686	+ 2.8673	+ 10 53 59.19	12.013
Groombridge 3241 . .	6.7	20 30 30.616	— 0.2142	+ 72 7 42.34	12.224
α Cygni	2.1	20 37 22.540	+ 2.0442	+ 44 51 20.16	+ 12.705
μ Aquarii	5.4	20 46 14.093	+ 3.2405	— 9 25 44.14	13.260
ν Cygni	4	20 52 44.228	+ 2.2338	+ 40 42 34.39	13.705
12 Year Cat. 1879 . .	6	20 52 56.481	— 2.5227	+ 80 6 18.60	13.706
61 ¹ Cygni	5	21 1 33.815	+ 2.6829	+ 38 9 53.46	17.506
ζ Cygni	3	21 7 52.300	+ 2.5493	+ 29 44 21.72	+ 14.591
α Cephei	3.2	21 15 44.325	1.4371	+ 62 4 53.95	15.162
1 Pegasi	4.5	21 16 34.983	2.7721	+ 19 17 45.62	15.220
β Aquarii	3	21 25 17.641	3.1624	— 6 5 38.29	15.640
β Cephei	3	21 27 7.146	0.7970	+ 70 2 18.30	15.750
ξ Aquarii	5	21 31 25.007	+ 3.1986	— 8 23 13.74	+ 15.950
ε Pegasi	2.3	21 38 20.505	2.9468	+ 9 19 48.13	16.337
11 Cephei	5	21 40 10.510	0.9040	+ 70 45 49.23	16.533
μ Capricorni	5	21 46 48.440	3.2769	— 14 6 40.52	16.760
79 Draconis	6.7	21 51 23.057	0.7331	+ 73 8 21.95	17.009
α Aquarii	3	21 59 40.301	+ 3.0830	— 0 53 50.69	+ 17.339
α Gruis	2	22 0 43.620	3.8100	— 47 32 10.86	17.227
θ Aquarii	4.5	22 10 33.226	3.1697	— 8 22 31.12	17.786
π Aquarii	5.4	22 19 11.994	3.0649	+ 0 46 26.44	18.141
η Aquarii	4	22 29 14.478	3.0839	— 0 43 49.57	18.445
226 Cephei (B.) . . .	5.6	22 30 10.827	+ 1.0803	+ 75 36 47.62	+ 18.524
ζ Pegasi	3.4	22 35 31.649	2.9907	+ 10 12 37.91	18.694
ι Cephei	3.4	22 45 26.713	2.1199	+ 65 34 28.79	18.869
λ Aquarii	4	22 46 24.373	3.1333	— 8 12 44.73	19.064
α Pis. Aus. (<i>Fomalhaut</i>)	1.2	22 51 4.351	3.3266	— 30 15 9.22	18.983
α Pegasi (<i>Markab</i>) . .	2	22 58 50.032	2.9845	+ 14 33 54.74	19.294
ο Cephei	5.6	23 13 44.685	+ 2.4405	+ 67 27 38.23	+ 19.664
θ Piscium	5.4	23 21 55.913	3.0409	+ 5 43 31.34	19.722
ι Piscium	4.5	23 33 49.799	3.0839	+ 4 58 53.06	19.480
γ Cephei	3.4	23 34 28.253	2.4091	+ 76 58 5.30	20.073
Groombridge 4163 . .	7	23 49 3.456	2.8575	+ 73 44 53.17	20.022
ω Piscium	4	23 53 12.068	+ 3.0780	+ 6 12 16.05	+ 19.930

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*), FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
	^h ^m 1 15	+88° 40'		^h ^m 1 14	+88° 40'		^h ^m 1 14	+88° 40'		^h ^m 1 14	+88° 40'
	^s	"		^s	"		^s	"		^s	"
0.3	27.92	54.5	1.2	58.74	54.6	1.1	38.19	49.5	1.0	28.59	40.4
1.3	27.00	54.6	2.2	57.82	54.5	2.1	37.60	49.3	2.0	28.66	40.1
2.3	26.03	54.8	3.2	56.95	54.3	3.1	37.07	49.0	3.0	28.75	39.8
3.3	25.03	54.9	4.2	56.15	54.2	4.1	36.61	48.7	4.0	28.84	39.5
4.3	24.02	54.9	5.2	55.40	54.0	5.1	36.20	48.4	5.0	28.91	39.2
5.3	23.04	55.0	6.2	54.69	53.9	6.1	35.83	48.1	6.0	28.94	38.9
6.2	22.10	55.0	7.2	53.98	53.7	7.1	35.44	47.9	7.0	28.93	38.6
7.2	21.20	55.1	8.2	53.26	53.6	8.1	35.05	47.6	8.0	28.89	38.3
8.2	20.35	55.1	9.2	52.51	53.5	9.1	34.63	47.4	9.0	28.85	38.0
9.2	19.54	55.1	10.2	51.72	53.4	10.1	34.17	47.1	10.0	28.83	37.7
10.2	18.75	55.2	11.2	50.88	53.3	11.1	33.67	46.9	11.0	28.86	37.3
11.2	17.94	55.2	12.2	50.01	53.1	12.1	33.15	46.6	12.0	28.96	37.0
12.2	17.11	55.3	13.1	49.12	52.9	13.1	32.64	46.3	13.0	29.13	36.6
13.2	16.23	55.3	14.1	48.24	52.7	14.1	32.16	46.0	14.0	29.36	36.3
14.2	15.30	55.4	15.1	47.39	52.5	15.1	31.73	45.7	15.0	29.65	36.0
15.2	14.32	55.4	16.1	46.59	52.3	16.1	31.36	45.4	16.0	29.98	35.7
16.2	13.30	55.4	17.1	45.86	52.1	17.1	31.08	45.0	17.0	30.32	35.4
17.2	12.26	55.4	18.1	45.20	51.9	18.1	30.87	44.7	18.0	30.65	35.1
18.2	11.22	55.4	19.1	44.00	51.7	19.1	30.69	44.4	19.0	30.95	34.8
19.2	10.21	55.3	20.1	44.03	51.4	20.1	30.54	44.1	20.0	31.22	34.6
20.2	9.26	55.3	21.1	43.47	51.2	21.0	30.40	43.8	21.0	31.45	34.3
21.2	8.37	55.2	22.1	42.90	51.0	22.0	30.24	43.5	22.0	31.65	34.1
22.2	7.54	55.2	23.1	42.30	50.9	23.0	30.05	43.3	23.0	31.88	33.8
23.2	6.74	55.1	24.1	41.66	50.7	24.0	29.82	43.0	24.0	32.11	33.5
24.2	5.96	55.0	25.1	40.98	50.5	25.0	29.56	42.7	25.0	32.39	33.2
25.2	5.19	55.0	26.1	40.26	50.3	26.0	29.30	42.4	25.9	32.74	32.8
26.2	4.38	55.0	27.1	39.54	50.1	27.0	29.05	42.1	26.9	33.16	32.5
27.2	3.52	55.0	28.1	38.84	49.8	28.0	28.83	41.8	27.9	33.65	32.2
28.2	2.62	54.9	29.1	38.19	49.5	29.0	28.66	41.4	28.9	34.18	31.9
29.2	1.67	54.9	30.1	37.60	49.3	30.0	28.57	41.1	29.9	34.74	31.6
30.2	0.69	54.8	31.1	37.07	49.0	31.0	28.55	40.7	30.9	35.30	31.4
31.2	59.71	54.7	32.1	36.61	48.7	32.0	28.59	40.4	31.9	35.83	31.2

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*), FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
	^h ^m 1 14	+88° 40'		^h ^m 1 14	+88° 40'		^h ^m 1 15	+88° 40'		^h ^m 1 15	+88° 40'
	^s	"		^s	"		^s	"		^s	"
1.9	35.83	31.2	1.6	56.56	24.9	1.8	23.97	23.2	1.7	53.39	26.4
2.9	36.33	30.9	2.8	57.27	24.7	2.8	24.88	23.2	2.7	54.39	26.6
3.9	36.79	30.7	3.8	57.99	24.6	3.8	25.84	23.2	3.7	55.39	26.8
4.9	37.22	30.5	4.8	58.76	24.4	4.8	26.86	23.2	4.7	56.38	27.0
5.9	37.62	30.2	5.8	59.59	24.3	5.8	27.93	23.2	5.7	57.32	27.3
6.9	38.02	29.9	6.8	60.49	24.1	6.8	29.03	23.3	6.7	58.20	27.5
7.9	38.47	29.7	7.8	61.44	24.0	7.7	30.13	23.3	7.7	59.03	27.8
8.9	38.96	29.4	8.8	62.43	23.9	8.7	31.19	23.4	8.7	59.80	28.1
9.9	39.55	29.1	9.8	63.45	23.8	9.7	32.21	23.5	9.7	60.53	28.3
10.9	40.19	28.8	10.8	64.46	23.7	10.7	33.19	23.6	10.7	61.25	28.5
11.9	40.89	28.6	11.8	65.44	23.6	11.7	34.10	23.7	11.7	61.98	28.7
12.9	41.63	28.3	12.8	66.38	23.6	12.7	34.97	23.8	12.7	62.75	28.9
13.9	42.30	28.1	13.8	67.28	23.6	13.7	35.81	23.9	13.6	63.57	29.1
14.9	43.14	27.9	14.8	68.13	23.5	14.7	36.66	24.0	14.6	64.42	29.3
15.9	43.86	27.7	15.8	68.96	23.5	15.7	37.54	24.1	15.6	65.31	29.6
16.9	44.54	27.6	16.8	69.78	23.4	16.7	38.47	24.2	16.6	66.21	29.8
17.9	45.18	27.4	17.8	70.61	23.4	17.7	39.45	24.3	17.6	67.11	30.1
18.9	45.79	27.2	18.8	71.48	23.3	18.7	40.48	24.4	18.6	67.97	30.4
19.9	46.38	27.0	19.8	72.42	23.2	19.7	41.53	24.5	19.6	68.79	30.7
20.9	46.90	26.8	20.8	73.41	23.2	20.7	42.59	24.6	20.6	69.54	31.0
21.9	47.63	26.6	21.8	74.45	23.1	21.7	43.64	24.7	21.6	70.22	31.3
22.9	48.32	26.3	22.8	75.52	23.1	22.7	44.66	24.9	22.6	70.85	31.5
23.9	49.07	26.2	23.8	76.59	23.0	23.7	45.63	25.0	23.6	71.45	31.8
24.9	49.89	26.0	24.8	77.64	23.0	24.7	46.53	25.2	24.6	72.05	32.1
25.9	50.76	25.8	25.8	78.66	23.0	25.7	47.37	25.4	25.6	72.67	32.3
26.9	51.66	25.6	26.8	79.63	23.1	26.7	48.18	25.6	26.6	73.33	32.6
27.9	52.55	25.5	27.8	80.55	23.1	27.7	48.98	25.7	27.6	74.02	32.8
28.9	53.42	25.3	28.8	81.42	23.1	28.7	49.78	25.9	28.6	74.76	33.1
29.9	54.27	25.2	29.8	82.26	23.2	29.7	50.61	26.0	29.6	75.53	33.4
30.9	55.08	25.1	30.8	83.10	23.2	30.7	51.48	26.1	30.6	76.31	33.7
31.9	55.84	25.0	31.8	83.97	23.2	31.7	52.41	26.3	31.6	77.07	34.0
32.8	56.56	24.9	32.8	84.88	23.2	32.7	53.39	26.4	32.6	77.80	34.3

APPARENT PLACES OF α URSAE MINORIS, (*Polaris*), FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 1 16	+88° 40'		^h ^m 1 16	+88° 40'		^h ^m 1 16	+88° 40'		^h ^m 1 15	+88° 41'
	^s	"		^s	"		^s	"		^s	"
1.6	17.80	34.3	1.5	31.50	44.8	1.4	32.62	56.5	1.3	80.48	6.2
2.6	18.48	34.7	2.5	31.77	45.2	2.4	32.37	56.8	2.3	79.94	6.4
3.6	19.09	35.0	3.5	31.91	45.6	3.4	32.16	57.2	3.3	79.43	6.6
4.6	19.64	35.4	4.5	32.02	46.0	4.4	31.98	57.5	4.3	78.91	6.9
5.6	20.15	35.7	5.5	32.15	46.4	5.4	31.82	57.8	5.3	78.37	7.1
6.6	20.63	36.1	6.5	32.31	46.7	6.4	31.68	58.2	6.3	77.78	7.4
7.6	21.09	36.4	7.5	32.51	47.1	7.4	31.53	58.5	7.3	77.14	7.7
8.6	21.56	36.7	8.5	32.75	47.4	8.4	31.35	58.9	8.3	76.43	8.0
9.6	22.08	37.0	9.5	33.01	47.8	9.4	31.10	59.3	9.3	75.66	8.3
10.6	22.66	37.3	10.5	33.28	48.1	10.4	30.79	59.6	10.3	74.85	8.5
11.6	23.28	37.6	11.5	33.52	48.5	11.4	30.42	60.0	11.3	74.00	8.7
12.6	23.91	37.9	12.5	33.71	48.9	12.4	29.98	60.4	12.3	73.15	8.9
13.6	24.53	38.3	13.5	33.85	49.3	13.4	29.50	60.7	13.3	72.33	9.1
14.6	25.13	38.6	14.5	33.92	49.7	14.4	29.00	61.0	14.3	71.56	9.3
15.6	25.68	39.0	15.5	33.92	50.1	15.4	28.52	61.3	15.3	70.84	9.4
16.6	26.16	39.4	16.5	33.88	50.5	16.4	28.06	61.6	16.3	70.15	9.6
17.6	26.58	39.8	17.5	33.80	50.9	17.4	27.64	61.9	17.3	69.48	9.8
18.6	26.93	40.1	18.5	33.71	51.3	18.4	27.26	62.2	18.3	68.82	10.0
19.6	27.25	40.5	19.5	33.64	51.6	19.4	26.91	62.5	19.3	68.13	10.2
20.6	27.55	40.9	20.5	33.60	52.0	20.4	26.58	62.8	20.3	67.39	10.4
21.6	27.83	41.2	21.5	33.61	52.3	21.4	26.23	63.1	21.3	66.60	10.6
22.6	28.15	41.5	22.5	33.65	52.6	22.4	25.84	63.5	22.3	65.75	10.8
23.6	28.53	41.8	23.5	33.72	53.0	23.4	25.40	63.8	23.3	64.85	11.0
24.6	28.95	42.1	24.5	33.79	53.4	24.4	24.89	64.2	24.3	63.91	11.2
25.6	29.30	42.5	25.4	33.83	53.8	25.4	24.31	64.5	25.3	62.96	11.3
26.6	29.84	42.8	26.4	33.83	54.2	26.4	23.67	64.8	26.3	62.02	11.4
27.6	30.20	43.2	27.4	33.76	54.6	27.4	23.01	65.1	27.3	61.10	11.5
28.6	30.71	43.6	28.4	33.62	55.0	28.4	22.35	65.4	28.3	60.24	11.6
29.6	31.07	44.0	29.4	33.42	55.4	29.4	21.70	65.7	29.3	59.43	11.7
30.6	31.36	44.4	30.4	33.17	55.8	30.4	21.07	65.9	30.3	58.65	11.8
31.6	31.50	44.8	31.4	32.90	56.2	31.3	20.48	66.2	31.3	57.88	11.9
32.6	31.77	45.2	32.4	32.62	56.5	32.3	19.94	66.4	32.3	57.10	12.0

APPARENT PLACES OF 51 CEPHEI, (*Hcv.*), FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
	^h ^m 6 44	+87° 13'		^h ^m 6 44	+87° 13'		^h ^m 6 44	+87° 13'		^h ^m 6 44	+87° 13'
	^s	"		^s	"		^s	"		^s	"
0.5	54.05	38.7	1.4	52.73	48.6	1.3	44.70	54.9	1.2	31.72	56.9
1.5	54.20	39.0	2.4	52.49	48.8	2.3	44.28	55.0	2.2	31.29	56.9
2.5	54.32	39.3	3.4	52.23	49.1	3.3	43.85	55.2	3.2	30.88	56.8
3.5	54.40	39.7	4.4	51.98	49.3	4.3	43.43	55.3	4.2	30.49	56.7
4.5	54.45	40.0	5.4	51.73	49.6	5.3	43.03	55.4	5.2	30.12	56.7
5.5	54.47	40.4	6.4	51.50	49.8	6.3	42.65	55.5	6.2	29.74	56.6
6.5	54.47	40.7	7.4	51.29	50.0	7.3	42.28	55.6	7.2	29.34	56.6
7.5	54.46	41.0	8.4	51.09	50.3	8.3	41.93	55.7	8.2	28.93	56.6
8.5	54.45	41.3	9.4	50.89	50.5	9.3	41.58	55.8	9.2	28 51	56 6
9.5	54.45	41.6	10.4	50.69	50.8	10.3	41.22	55.9	10.2	28.07	56.5
10.5	54.47	41.8	11.4	50.46	51.0	11.3	40.84	56.1	11.2	27.61	56.5
11.5	54.50	42.1	12.4	50.21	51.3	12.3	40.43	56.2	12.2	27.13	56.4
12.5	54.54	42.4	13.4	49.93	51.6	13.3	40.00	56.3	13.2	26.66	56.3
13.5	54.58	42.8	14.4	49.62	51.9	14.3	39.54	56.4	14.2	26.21	56.2
14.5	54.60	43.1	15.4	49.29	52.1	15.3	39.07	56.5	15.2	25.79	56.0
15.5	54.60	43.4	16.4	48.95	52.4	16.3	38.60	56.6	16.2	25.41	55.9
16.4	54.56	43.7	17.4	48.59	52.6	17.3	38.12	56.7	17.2	25.07	55.7
17.4	54.49	44.1	18.4	48.24	52.8	18.3	37.66	56.7	18.2	24.73	55.6
18.4	54.40	44.4	19.4	47.91	52.9	19.3	37.23	56.7	19.2	24.40	55.5
19.4	54.28	44.8	20.4	47.60	53.1	20.3	36.84	56.7	20.2	24.07	55.3
20.4	54.15	45.1	21.4	47.32	53.3	21.3	36.46	56.7	21.2	23.73	55.2
21.4	54.02	45.4	22.3	47.05	53.5	22.3	36.09	56.8	22.2	23.38	55.1
22.4	53.89	45.6	23.3	46.77	53.6	23.3	35.72	56.8	23.2	23.00	55.0
23.4	53.78	45.9	24.3	46.49	53.8	24.3	35.35	56.8	24.2	22.60	54.9
24.4	53.68	46.1	25.3	46.19	54.0	25.3	34.96	56.9	25.2	22.19	54.8
25.4	53.60	46.4	26.3	45.86	54.3	26.3	34.54	56.9	26.2	21.77	54.6
26.4	53.53	46.7	27.3	45.50	54.5	27.3	34.10	57.0	27.2	21.37	54.4
27.4	53.46	47 0	28.3	45.11	54.7	28.3	33.63	57.0	28.2	20.98	54.2
28.4	53.38	47.3	29.3	44.70	54.9	29.3	33.14	57.0	29.2	20.61	54.0
29.4	53.27	47.6	30.3	44.28	55.0	30.3	32.65	57.0	30.2	20.28	53.8
30.4	53.12	47.9	31.3	43.85	55.2	31.2	32.17	57.0	31.2	19.97	53.6
31.4	52.94	48.3	32.3	43.43	55.3	32.2	31.72	56.9	32.2	19.68	53.4

APPARENT PLACES OF 51 CEPHEI, (*Hev.*) FOR THE UPPER TRANSIT

AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
	^h ^m 6 44	[°] ['] +87 13		^h ^m 6 44	[°] ['] +87 13		^h ^m 6 44	[°] ['] +87 13		^h ^m 6 44	[°] ['] +87 13
	^s	["]		^s	["]		^s	["]		^s	["]
1.2	19.97	53.6	1.1	12.67	45.9	1.0	12.18	36.5	1.9	18.83	26.9
2.2	19.68	53.4	2.1	12.55	45.6	2.0	12.24	36.2	2.9	19.16	26.6
3.2	19.40	53.2	3.1	12.41	45.3	3.0	12.29	35.9	3.9	19.51	26.3
4.2	19.12	53.0	4.1	12.26	45.1	4.0	12.35	35.6	4.9	19.89	26.1
5.2	18.83	52.8	5.1	12.10	44.8	5.0	12.43	35.3	5.9	20.29	25.8
6.1	18.51	52.7	6.1	11.95	44.5	6.0	12.54	34.9	6.9	20.70	25.6
7.1	18.18	52.5	7.1	11.82	44.2	7.0	12.69	34.6	7.9	21.10	25.3
8.1	17.84	52.3	8.1	11.71	43.9	8.0	12.87	34.2	8.9	21.49	25.0
9.1	17.48	52.1	9.1	11.62	43.5	9.0	13.09	33.9	9.9	21.87	24.7
10.1	17.13	51.9	10.1	11.57	43.2	10.0	13.31	33.5	10.9	22.23	24.5
11.1	16.80	51.6	11.1	11.55	42.8	11.0	13.54	33.2	11.9	22.57	24.3
12.1	16.50	51.3	12.0	11.55	42.5	12.0	13.77	33.0	12.9	22.90	24.1
13.1	16.23	51.1	13.0	11.57	42.2	13.0	13.99	32.7	13.9	23.23	23.9
14.1	16.00	50.8	14.0	11.61	41.9	14.0	14.19	32.4	14.9	23.57	23.6
15.1	15.80	50.5	15.0	11.63	41.6	15.0	14.36	32.1	15.9	23.93	23.3
16.1	15.61	50.2	16.0	11.63	41.3	16.0	14.51	31.8	16.9	24.33	23.0
17.1	15.43	50.0	17.0	11.60	41.0	17.0	14.67	31.5	17.9	24.76	22.8
18.1	15.25	49.8	18.0	11.55	40.7	17.9	14.84	31.2	18.9	25.21	22.5
19.1	15.05	49.5	19.0	11.51	40.4	18.9	15.03	30.9	19.9	25.66	22.3
20.1	14.83	49.3	20.0	11.47	40.1	19.9	15.25	30.5	20.9	26.14	22.1
21.1	14.59	49.1	21.0	11.44	39.7	20.9	15.49	30.2	21.9	26.59	21.9
22.1	14.35	48.8	22.0	11.44	39.4	21.9	15 76	29.9	22.9	27.03	21.7
23.1	14.10	48.6	23.0	11.47	39.0	22.9	16.07	29.6	23.8	27.45	21.5
24.1	13.85	48.3	24.0	11.52	38.6	23.9	16.38	29.3	24.8	27.85	21.4
25.1	13.62	48.0	25.0	11.60	38.3	24.9	16.69	29.0	25.8	28.24	21.2
26.1	13.40	47.7	26.0	11.71	38.0	25.9	16.98	28.7	26.8	28.62	21.1
27.1	13.22	47.3	27.0	11.82	37.7	26.9	17.26	28.5	27.8	29.01	20.9
28.1	13.09	47.0	28.0	11.93	37.4	27.9	17.53	28.2	28.8	29.42	20.6
29.1	12.96	46.7	29.0	12.03	37.1	28.9	17.78	28.0	29.8	29.86	20.4
30.1	12.88	46.4	30.0	12.11	36.8	29.9	18.02	27.8	30.8	30.34	20.2
31.1	12.78	46.1	31.0	12.18	36.5	30.9	18.27	27.5	31.8	30.85	20.0
32.1	12.67	45.9	32.0	12.24	36.2	31.9	18.54	27.2	32.8	31.38	19.8

APPARENT PLACES OF 51 CEPHEI, (*Hec.*), FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 6 44	[°] ['] +87 13		^h ^m 6 44	[°] ['] +87 13		^h ^m 6 45	[°] ['] +87 13		^h ^m 6 45	[°] ['] +87 13
1.8	^s 31.38	["] 19.8	1.7	^s 46.77	["] 16.6	1.7	^s 2.92	["] 17.9	1.6	^s 15.61	["] 23.3
2.8	31.91	19.6	2.7	47.34	16.6	2.7	3.36	18.0	2.6	15.91	23.5
3.8	32.44	19.5	3.7	47.88	16.7	3.7	3.79	18.1	3.6	16 23	23.7
4.8	32.96	19.3	4.7	48.39	16.7	4.6	4.23	18.2	4.6	16.56	23.9
5.8	33.47	19.2	5.7	48.88	16.7	5.6	4.68	18.3	5.6	16.91	24.2
6.8	33.96	19.1	6.7	49.36	16.6	6.6	5.15	18.4	6.6	17.26	24.4
7.8	34.42	19.0	7.7	49.84	16.6	7.6	5.64	18.5	7.6	17.62	24.7
8.8	34.86	18.8	8.7	50.34	16.6	8.6	6.15	18.7	8.6	17.96	25.0
9.8	35.29	18.7	9.7	50.85	16.5	9.6	6.66	18.8	9.5	18.27	25.3
10.8	35.74	18.6	10.7	51.38	16.5	10.6	7.17	19.0	10.5	18.55	25.6
11.8	36.21	18.4	11.7	51.94	16.5	11.6	7.66	19.1	11.5	18.80	25.9
12.8	36.69	18.2	12.7	52.51	16.5	12.6	8.13	19.3	12.5	19.02	26.2
13.8	37.20	18.1	13.7	53.09	16.5	13.6	8.57	19.5	13.5	19.22	26.5
14.8	37.73	17.9	14.7	53.66	16.5	14.6	8.90	19.8	14.5	19.41	26.8
15.8	38.29	17.8	15.7	54.22	16.6	15.6	9.38	20.0	15.5	19.61	27.0
16.8	38.85	17.7	16.7	54.75	16.6	16.6	9.75	20.2	16.5	19.82	27.3
17.8	39.40	17.6	17.7	55.25	16.7	17.6	10.12	20.3	17.5	20.04	27.5
18.8	39.94	17.5	18.7	55.74	16.8	18.6	10.50	20.5	18.5	20.28	27.8
19.8	40.45	17.5	19.7	56.21	16.9	19.6	10.90	20.6	19.5	20.53	28.0
20.8	40.94	17.4	20.7	56.67	16.9	20.6	11.33	20.8	20.5	20.79	28.3
21.8	41.41	17.4	21.7	57.13	17.0	21.6	11.77	21.0	21.5	21.05	28.6
22.8	41.87	17.3	22.7	57.61	17.0	22.6	12.22	21.1	22.5	21.29	28.9
23.8	42.34	17.2	23.7	58.11	17.0	23.6	12.68	21.3	23.5	21.51	29.3
24.8	42 82	17.1	24.7	58.64	17.1	24.6	13.14	21.6	24.5	21.69	29.6
25.7	43.33	17.0	25.7	59.20	17.1	25.6	13.58	21.8	25.5	21.84	30.0
26.7	43.86	16.9	26.7	59.77	17.1	26.6	13.99	22.1	26.5	21.95	30.3
27.7	44.42	16.8	27.7	60.34	17.2	27.6	14.36	22.3	27.5	22.04	30.6
28.7	45.00	16.7	28.7	60.90	17.3	28.6	14.70	22.6	28.5	22.12	30.9
29.7	45.59	16.7	29.7	61.45	17.5	29.6	15.02	22.8	29.5	22.21	31.2
30.7	46.18	16.6	30.7	61.97	17.6	30.6	15.32	23.1	30.5	22.30	31.5
31.7	46.77	16.6	31.7	62.46	17.8	31.6	15.61	23.3	31.5	22.40	31.7
32.7	47.34	16.6	32.7	62.92	17.9	32.6	15.91	23.5	32.5	22.52	32.0

APPARENT PLACES OF J URSÆ MINORIS, FOR THE UPPER TRANSIT

AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h 18 10	^m +86 36		^h 18 10	^m +86 36		^h 18 10	^m +86 36		^h 18 10	^m +86 36
1.0	13.04	32.5	1.9	16.55	22.5	1.8	24.48	17.0	1.7	35.60	16.4
2.0	13.01	32.1	2.9	16.80	22.2	2.8	24.85	16.9	2.7	35.94	16.5
3.0	13.01	31.8	3.9	17.05	22.0	3.8	25.22	16.8	3.7	36.26	16.7
4.0	13.03	31.4	4.9	17.30	21.8	4.8	25.58	16.7	4.7	36.58	16.8
5.0	13.08	31.0	5.9	17.54	21.6	5.8	25.92	16.7	5.7	36.90	16.8
6.0	13.14	30.7	6.9	17.77	21.4	6.8	26.25	16.6	6.7	37.22	16.9
7.0	13.21	30.4	7.9	17.99	21.2	7.8	26.58	16.6	7.7	37.55	17.0
8.0	13.29	30.1	8.9	18.22	21.0	8.8	26.90	16.5	8.7	37.89	17.1
9.0	13.36	29.8	9.9	18.44	20.7	9.8	27.23	16.4	9.7	38.25	17.1
9.9	13.42	29.5	10.9	18.67	20.5	10.8	27.57	16.3	10.7	38.62	17.2
10.9	13.47	29.2	11.9	18.92	20.2	11.8	27.92	16.2	11.7	38.98	17.4
11.9	13.51	28.9	12.9	19.19	19.9	12.8	28.29	16.1	12.7	39.34	17.5
12.9	13.56	28.6	13.9	19.49	19.7	13.8	28.68	16.0	13.7	39.69	17.7
13.9	13.62	28.3	14.9	19.81	19.5	14.8	29.07	16.0	14.7	40.02	17.9
14.9	13.69	27.9	15.9	20.13	19.3	15.8	29.47	15.9	15.7	40.33	18.1
15.9	13.79	27.6	16.9	20.46	19.1	16.8	29.86	15.9	16.7	40.62	18.3
16.9	13.91	27.2	17.8	20.78	18.9	17.8	30.24	15.9	17.7	40.90	18.5
17.9	14.04	26.9	18.8	21.09	18.7	18.8	30.61	16.0	18.7	41.17	18.6
18.9	14.19	26.5	19.8	21.39	18.6	19.8	30.96	16.0	19.7	41.44	18.8
19.9	14.36	26.2	20.8	21.68	18.5	20.8	31.29	16.0	20.7	41.71	18.9
20.9	14.52	25.9	21.8	21.96	18.3	21.8	31.61	16.0	21.7	41.99	19.1
21.9	14.68	25.7	22.8	22.23	18.2	22.8	31.94	16.0	22.7	42.28	19.2
22.9	14.84	25.4	23.8	22.50	18.0	23.8	32.27	16.0	23.7	42.58	19.4
23.9	14.99	25.1	24.8	22.79	17.8	24.7	32.61	16.0	24.7	42.89	19.6
24.9	15.12	24.9	25.8	23.09	17.6	25.7	32.96	16.0	25.7	43.20	19.8
25.9	15.25	24.6	26.8	23.41	17.5	26.7	33.32	16.0	26.7	43.51	20.0
26.9	15.38	24.3	27.8	23.76	17.3	27.7	33.70	16.0	27.7	43.81	20.2
27.9	15.53	24.0	28.8	24.12	17.1	28.7	34.09	16.1	28.7	44.09	20.5
28.9	15.69	23.7	29.8	24.48	17.0	29.7	34.47	16.1	29.6	44.35	20.8
29.9	15.87	23.4	30.8	24.85	16.9	30.7	34.86	16.2	30.6	44.59	21.0
30.9	16.07	23.1	31.8	25.22	16.8	31.7	35.24	16.3	31.6	44.82	21.3
31.9	16.30	22.8	32.8	25.58	16.7	32.7	35.60	16.4	32.6	45.04	21.5

APPARENT PLACES OF *URSÆ MINORIS*, FOR THE UPPER TRANSIT

AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h 18 10	^m +86 36		^h 18 10	^m +86 36		^h 18 10	^m +86 36		^h 18 10	^m +86 36
1.6	^s 44.82	21.3	1.6	^s 49.89	30.0	1.5	^s 49.24	39.8	1.4	^s 42.93	48.8
2.6	45.04	21.5	2.6	49.97	30.3	2.5	49.16	40.1	2.4	42.64	49.1
3.6	45.26	21.7	3.6	50.05	30.6	3.5	49.07	40.4	3.4	42.33	49.4
4.6	45.48	22.0	4.6	50.14	30.9	4.5	48.96	40.8	4.4	42.01	49.7
5.6	45.71	22.2	5.6	50.23	31.2	5.5	48.84	41.1	5.4	41.67	49.9
6.6	45.95	22.4	6.6	50.31	31.6	6.5	48.69	41.5	6.4	41.32	50.2
7.6	46.20	22.6	7.5	50.37	31.9	7.5	48.52	41.8	7.4	40.97	50.4
8.6	46.45	22.8	8.5	50.41	32.3	8.5	48.32	42.2	8.4	40.63	50.6
9.6	46.71	23.1	9.5	50.43	32.6	9.5	48.12	42.5	9.4	40.29	50.7
10.6	46.96	23.4	10.5	50.42	33.0	10.5	47.91	42.8	10.4	39.97	50.9
11.6	47.18	23.7	11.5	50.39	33.4	11.5	47.70	43.1	11.4	39.66	51.1
12.6	47.37	24.0	12.5	50.35	33.7	12.4	47.50	43.3	12.4	39.36	51.3
13.6	47.54	24.3	13.5	50.32	34.0	13.4	47.31	43.6	13.4	39.05	51.5
14.6	47.69	24.6	14.5	50.29	34.3	14.4	47.13	43.9	14.4	38.74	51.7
15.6	47.83	24.9	15.5	50.26	34.6	15.4	46.97	44.1	15.4	38.42	52.0
16.6	47.97	25.2	16.5	50.24	34.9	16.4	46.80	44.4	16.4	38.07	52.2
17.6	48.10	25.5	17.5	50.23	35.2	17.4	46.62	44.7	17.3	37.70	52.4
18.6	48.24	25.7	18.5	50.23	35.5	18.4	46.43	45.0	18.3	37.32	52.6
19.6	48.39	26.0	19.5	50.22	35.8	19.4	46.22	45.4	19.3	36.93	52.8
20.6	48.55	26.2	20.5	50.20	36.2	20.4	45.99	45.7	20.3	36.55	53.0
21.6	48.72	26.5	21.5	50.17	36.5	21.4	45.74	46.0	21.3	36.16	53.2
22.6	48.89	26.8	22.5	50.12	36.9	22.4	45.48	46.3	22.3	35.78	53.3
23.6	49.05	27.1	23.5	50.05	37.3	23.4	45.21	46.6	23.3	35.41	53.4
24.6	49.21	27.4	24.5	49.96	37.6	24.4	44.94	46.9	24.3	35.05	53.5
25.6	49.35	27.8	25.5	49.86	38.0	25.4	44.67	47.1	25.3	34.70	53.7
26.6	49.46	28.1	26.5	49.75	38.3	26.4	44.41	47.3	26.3	34.36	53.8
27.6	49.55	28.5	27.5	49.63	38.6	27.4	44.16	47.5	27.3	34.01	54.0
28.6	49.63	28.8	28.5	49.52	38.9	28.4	43.92	47.8	28.3	33.65	54.2
29.6	49.79	29.2	29.5	49.42	39.2	29.4	43.68	48.0	29.3	33.27	54.4
30.6	49.76	29.5	30.5	49.33	39.5	30.4	43.45	48.3	30.3	32.88	54.5
31.6	49.82	29.8	31.5	49.24	39.8	31.4	43.20	48.5	31.3	32.47	54.7
32.6	49.89	30.0	32.5	49.16	40.1	32.4	42.93	48.8	32.3	32.04	54.8

APPARENT PLACES OF JURSÆ MINORIS, FOR THE UPPER TRANSIT

AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 18 10	+86° 36'		^h ^m 18 10	+86° 36'		^h ^m 18 9	+86° 36'		^h ^m 18 9	+86° 36'
1.3	^s 32.04	54.8	1.2	^s 19.38	56.4	1.1	^s 66.80	53.3	1.1	^s 57.88	46.3
2.3	31.60	55.0	2.2	18.93	56.4	2.1	66.46	53.1	2.1	57.69	46.0
3.3	31.16	55.1	3.2	18.49	56.3	3.1	66.13	53.0	3.1	57.49	45.8
4.3	30.72	55.2	4.2	18.07	56.3	4.1	65.79	52.8	4.1	57.28	45.5
5.3	30.30	55.2	5.2	17.67	56.2	5.1	65.46	52.6	5.0	57.07	45.2
6.3	29.90	55.3	6.2	17.28	56.1	6.1	65.12	52.5	6.0	56.86	45.0
7.3	29.51	55.4	7.2	16.88	56.1	7.1	64.77	52.4	7.0	56.65	44.7
8.3	29.12	55.5	8.2	16.49	56.1	8.1	64.41	52.2	8.0	56.45	44.4
9.3	28.74	55.6	9.2	16.09	56.0	9.1	64.04	52.0	9.0	56.26	44.0
10.3	28.35	55.7	10.2	15.67	56.0	10.1	63.68	51.8	10.0	56.09	43.7
11.3	27.96	55.8	11.2	15.23	56.0	11.1	63.32	51.5	11.0	55.94	43.3
12.3	27.56	55.9	12.2	14.79	55.9	12.1	62.98	51.3	12.0	55.81	43.0
13.3	27.14	56.0	13.2	14.35	55.9	13.1	62.66	51.0	13.0	55.70	42.6
14.3	26.70	56.1	14.2	13.91	55.8	14.1	62.36	50.8	14.0	55.60	42.3
15.3	26.25	56.2	15.2	13.47	55.7	15.1	62.08	50.5	15.0	55.51	42.0
16.3	25.79	56.2	16.2	13.05	55.5	16.1	61.82	50.2	16.0	55.41	41.7
17.3	25.34	56.3	17.2	12.65	55.4	17.1	61.56	50.0	17.0	55.29	41.4
18.3	24.90	56.3	18.2	12.26	55.3	18.1	61.30	49.8	18.0	55.17	41.1
19.3	24.48	56.3	19.2	11.88	55.1	19.1	61.03	49.6	19.0	55.04	40.8
20.3	24.07	56.3	20.2	11.52	55.0	20.1	60.74	49.4	20.0	54.91	40.5
21.3	23.67	56.3	21.2	11.15	54.9	21.1	60.44	49.2	21.0	54.79	40.2
22.3	23.28	56.3	22.2	10.77	54.8	22.1	60.13	48.9	22.0	54.67	39.9
23.3	22.89	56.3	23.2	10.38	54.7	23.1	59.82	48.7	23.0	54.56	39.5
24.2	22.49	56.3	24.2	9.98	54.6	24.1	59.52	48.4	24.0	54.48	39.1
25.2	22.08	56.4	25.2	9.57	54.5	25.1	59.23	48.1	25.0	54.43	38.8
26.2	21.66	56.4	26.2	9.15	54.4	26.1	58.96	47.8	26.0	54.40	38.4
27.2	21.22	56.5	27.2	8.72	54.3	27.1	58.71	47.5	27.0	54.38	38.1
28.2	20.77	56.5	28.2	8.30	54.1	28.1	58.48	47.2	28.0	54.37	37.7
29.2	20.31	56.5	29.2	7.90	53.9	29.1	58.27	46.9	29.0	54.37	37.4
30.2	19.84	56.5	30.2	7.52	53.7	30.1	58.07	46.6	30.0	54.36	37.1
31.2	19.38	56.4	31.1	7.15	53.5	31.1	57.88	46.3	31.0	54.35	36.8
32.2	18.93	56.4	32.1	6.80	53.3	32.1	57.69	46.0	32.0	54.33	36.5

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
	^h ^m 19 41	+88° 56'		^h ^m 19 41	+88° 56'		^h ^m 19 41	+88° 56'		^h ^m 19 42	+88° 56'
1.1	^s 36.15	54.7	1.0	^s 31.90	44.8	1.9	^s 47.90	36.8	1.8	^s 19.59	32.5
2.1	35.54	54.3	2.0	32.23	44.5	2.9	48.86	36.6	2.8	20.73	32.5
3.1	35.01	54.0	3.0	32.62	44.2	3.9	49.82	36.4	3.8	21.82	32.5
4.0	34.56	53.7	4.0	33.05	43.8	4.9	50.76	36.2	4.8	22.86	32.5
5.0	34.20	53.3	5.0	33.48	43.6	5.9	51.67	36.0	5.8	23.88	32.5
6.0	33.91	53.0	6.0	33.89	43.3	6.9	52.55	35.9	6.8	24.91	32.4
7.0	33.67	52.7	7.0	34.27	43.0	7.9	53.40	35.7	7.8	25.97	32.4
8.0	33.46	52.4	8.0	34.62	42.8	8.9	54.22	35.5	8.8	27.09	32.3
9.0	33.24	52.1	8.9	34.94	42.5	9.9	55.03	35.3	9.8	28.27	32.3
10.0	32.98	51.8	9.9	35.25	42.2	10.9	55.87	35.2	10.8	29.50	32.3
11.0	32.69	51.6	10.9	35.59	41.9	11.9	56.77	35.0	11.8	30.76	32.2
12.0	32.38	51.3	11.9	35.98	41.6	12.9	57.74	34.7	12.8	32.03	32.2
13.0	32.07	51.0	12.9	36.43	41.3	13.9	58.77	34.5	13.8	33.30	32.3
14.0	31.75	50.7	13.9	36.95	40.9	14.8	59.86	34.3	14.6	34.54	32.3
15.0	31.46	50.3	14.9	37.55	40.6	15.8	60.99	34.2	15.8	35.71	32.4
16.0	31.23	50.0	15.9	38.22	40.3	16.8	62.14	34.0	16.8	36.81	32.5
17.0	31.09	49.6	16.9	38.94	40.1	17.8	63.29	33.9	17.8	37.85	32.5
18.0	31.02	49.3	17.9	39.67	39.8	18.8	64.40	33.8	18.8	38.85	32.6
19.0	31.01	48.9	18.9	40.38	39.5	19.8	65.46	33.7	19.8	39.83	32.7
20.0	31.07	48.6	19.9	41.06	39.3	20.8	66.46	33.6	20.8	40.81	32.7
21.0	31.17	48.3	20.9	41.70	39.1	21.8	67.41	33.5	21.8	41.82	32.8
22.0	31.28	47.9	21.9	42.29	38.9	22.8	68.34	33.4	22.7	42.80	32.8
23.0	31.37	47.7	22.9	42.85	38.6	23.8	69.26	33.3	23.7	44.02	32.9
24.0	31.43	47.4	23.9	43.40	38.4	24.8	70.21	33.2	24.7	45.19	32.9
25.0	31.45	47.1	24.9	43.98	38.1	25.8	71.22	33.1	25.7	46.39	33.0
26.0	31.44	46.8	25.9	44.62	37.9	26.8	72.31	33.0	26.7	47.60	33.1
27.0	31.40	46.5	26.9	45.33	37.6	27.8	73.46	32.8	27.7	48.80	33.2
28.0	31.37	46.2	27.9	46.12	37.3	28.8	74.66	32.7	28.7	49.96	33.4
29.0	31.38	45.9	28.9	46.98	37.1	29.8	75.89	32.6	29.7	51.06	33.5
30.0	31.47	45.5	29.9	47.90	36.8	30.8	77.14	32.6	30.7	52.10	33.7
31.0	31.64	45.2	30.9	48.86	36.6	31.8	78.39	32.5	31.7	53.08	33.8
32.0	31.90	44.8	31.9	49.82	36.4	32.8	79.69	32.5	32.7	54.02	34.0

APPARENT PLACES OF λ URSAE MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 19 42	+88° 56'		^h ^m 19 43	+88° 56'		^h ^m 19 43	+88° 56'		^h ^m 19 43	+88° 56'
	^s	"		^s	"		^s	"		^s	"
1.7	53.08	33.8	1.6	19.50	40.1	1.6	30.50	49.3	1.5	23.86	59.8
2.7	54.02	34.0	2.6	20.11	40.4	2.6	30.09	49.6	2.5	23.40	60.1
3.7	54.94	34.1	3.6	20.76	40.6	3.5	30.86	49.9	3.5	22.86	60.5
4.7	55.86	34.2	4.6	21.44	40.8	4.5	31.03	50.3	4.5	22.23	60.9
5.7	56.82	34.3	5.6	22.14	41.1	5.5	31.14	50.6	5.5	21.53	61.2
6.7	57.83	34.4	6.6	22.84	41.4	6.5	31.17	51.0	6.5	20.78	61.5
7.7	58.89	34.6	7.6	23.51	41.7	7.5	31.12	51.4	7.5	20.00	61.8
8.7	59.98	34.7	8.6	24.11	42.0	8.5	30.99	51.8	8.5	19.23	62.1
9.7	61.08	34.9	9.6	24.64	42.3	9.5	30.79	52.1	9.4	18.49	62.4
10.7	62.18	35.0	10.6	25.09	42.7	10.5	30.54	52.5	10.4	17.80	62.7
11.7	63.24	35.2	11.6	25.46	43.0	11.5	30.27	52.8	11.4	17.15	63.0
12.7	64.24	35.5	12.6	25.78	43.3	12.5	30.02	53.2	12.4	16.52	63.3
13.7	65.17	35.7	13.6	26.06	43.6	13.5	29.81	53.5	13.4	15.91	63.6
14.7	66.02	35.9	14.6	26.34	43.9	14.5	29.65	53.8	14.4	15.29	63.9
15.7	66.79	36.1	15.6	26.65	44.2	15.5	29.52	54.1	15.4	14.64	64.2
16.7	67.52	36.4	16.6	27.00	44.5	16.5	29.41	54.4	16.4	13.92	64.5
17.7	68.25	36.6	17.6	27.39	44.8	17.5	29.31	54.7	17.4	13.14	64.9
18.7	68.99	36.7	18.6	27.81	45.0	18.5	29.18	55.1	18.4	12.28	65.2
19.7	69.76	36.9	19.6	28.25	45.3	19.5	29.00	55.5	19.4	11.36	65.5
20.7	70.58	37.1	20.6	28.63	45.6	20.5	28.75	55.8	20.4	10.41	65.8
21.7	71.46	37.3	21.6	29.06	46.0	21.5	28.42	56.2	21.4	9.45	66.1
22.7	72.37	37.5	22.6	29.39	46.3	22.5	28.03	56.6	22.4	8.49	66.4
23.7	73.28	37.7	23.6	29.65	46.7	23.5	27.59	56.9	23.4	7.57	66.6
24.7	74.18	38.0	24.6	29.84	47.1	24.5	27.08	57.3	24.4	6.70	66.8
25.7	75.04	38.2	25.6	29.96	47.4	25.5	26.59	57.6	25.4	5.87	67.1
26.7	75.83	38.5	26.6	30.04	47.8	26.5	26.14	57.9	26.4	5.06	67.3
27.7	76.55	38.8	27.6	30.10	48.1	27.5	25.72	58.2	27.4	4.25	67.6
28.7	77.20	39.1	28.6	30.15	48.4	28.5	25.32	58.5	28.4	3.43	67.9
29.6	77.80	39.4	29.6	30.22	48.7	29.5	24.95	58.8	29.4	2.54	68.2
30.6	78.36	39.6	30.6	30.34	49.0	30.5	24.60	59.1	30.4	1.59	68.5
31.6	78.92	39.9	31.6	30.50	49.3	31.5	24.25	59.4	31.4	0.56	68.8
32.6	79.50	40.1	32.6	30.69	49.6	32.5	23.86	59.8			

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 19 42	+88° 57'		^h ^m 19 41	+88° 57'		^h ^m 19 41	+88° 57'		^h ^m 19 40	+88° 57'
1.4	^s 59.46	" 9.1	1.3	^s 83.53	" 15.0	1.2	^s 41.37	" 16.6	1.1	^s 64.55	" 13.3
2.4	58.31	9.3	2.3	82.09	15.1	2.2	40.11	16.5	2.1	63.60	13.3
3.4	57.12	9.6	3.3	80.70	15.2	3.2	38.89	16.5	3.1	62.64	13.0
4.4	55.92	9.8	4.3	79.37	15.3	4.2	37.67	16.4	4.1	61.65	12.8
5.4	54.75	10.0	5.3	78.10	15.4	5.2	36.44	16.4	5.1	60.61	12.7
6.4	53.62	10.2	6.3	76.86	15.4	6.2	35.19	16.4	6.1	59.54	12.5
7.4	52.54	10.4	7.3	75.64	15.5	7.2	33.90	16.4	7.1	58.45	12.3
8.4	51.52	10.6	8.3	74.41	15.6	8.2	32.55	16.4	8.1	57.36	12.1
9.4	50.52	10.9	9.3	73.16	15.8	9.2	31.15	16.3	9.1	56.30	11.9
10.4	49.51	11.1	10.3	71.86	15.9	10.2	29.73	16.3	10.1	55.29	11.7
11.4	48.48	11.3	11.3	70.50	16.0	11.2	28.32	16.2	11.1	54.35	11.4
12.4	47.42	11.6	12.3	69.08	16.1	12.2	26.95	16.1	12.1	53.50	11.1
13.4	46.30	11.8	13.3	67.62	16.2	13.2	25.63	15.9	13.1	52.71	10.8
14.4	45.11	12.1	14.3	66.15	16.3	14.2	24.38	15.8	14.1	51.97	10.5
15.4	43.85	12.3	15.3	64.69	16.3	15.2	23.19	15.6	15.1	51.26	10.3
16.3	42.55	12.5	16.3	63.25	16.4	16.2	22.05	15.5	16.1	50.54	10.1
17.3	41.23	12.7	17.3	61.85	16.4	17.2	20.94	15.4	17.1	49.79	9.9
18.3	39.92	12.9	18.3	60.52	16.4	18.2	19.84	15.3	18.1	49.00	9.7
19.3	38.65	13.0	19.3	59.25	16.4	19.2	18.72	15.2	19.1	48.16	9.5
20.3	37.43	13.2	20.3	58.01	16.4	20.2	17.56	15.1	20.1	47.30	9.2
21.3	36.26	13.3	21.2	56.78	16.5	21.2	16.34	15.0	21.1	46.43	9.0
22.3	35.12	13.4	22.2	55.53	16.5	22.2	15.07	14.9	22.1	45.56	8.7
23.3	34.00	13.6	23.2	54.25	16.6	23.2	13.76	14.8	23.1	44.73	8.4
24.3	32.88	13.8	24.2	52.91	16.6	24.2	12.43	14.7	24.1	43.97	8.1
25.3	31.72	14.0	25.2	51.50	16.7	25.2	11.12	14.5	25.1	43.30	7.8
26.3	30.50	14.2	26.2	50.03	16.7	26.2	9.86	14.3	26.1	42.71	7.5
27.3	29.22	14.4	27.2	48.52	16.7	27.1	8.67	14.1	27.1	42.18	7.3
28.3	27.87	14.5	28.2	47.01	16.7	28.1	7.55	13.9	28.1	41.71	6.9
29.3	26.46	14.7	29.2	45.52	16.7	29.1	6.40	13.7	29.1	41.27	6.6
30.3	25.00	14.9	30.2	44.08	16.7	30.1	5.50	13.5	30.1	40.84	6.3
31.3	23.53	15.0	31.2	42.69	16.6	31.1	4.55	13.3	31.1	40.39	6.1
32.3	22.09	15.1	32.2	41.37	16.6	32.1	3.60	13.2	32.1	39.90	5.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Andromedæ.		γ Pegasi. (Algenib.)		β Hydri.		12 Ceti.									
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.								
	^h 0	^m 2	^h 0	^m 7	^h 0	^m 19	^h 0	^m 23								
(Dec. 30.3)	15.19	-13	15.5	-0.8	7.46	-12	28 54	-96	101.6	+0.7	58.94	-11	50.1	-0.7		
Jan. 9.2	15.06	.13	14.6	1.1	7.35	.11	28 7	0.9	27.61	.91	100.6	1.4	58.83	.11	50.7	0.6
19.2	14.93	.12	13.4	1.3	7.24	.10	27.8	1.0	26.74	.83	98.9	1.9	58.72	.11	51.2	0.5
29.2	14.82	.11	12.0	1.5	7.14	.09	26.7	1.0	25.95	.74	96.8	2.4	58.62	.10	51.7	0.3
Feb. 8.1	14.72	.09	10.4	1.6	7.06	.07	25.7	1.0	25.26	.63	94.1	2.9	58.53	.08	51.9	-0.2
18.1	14.64	.06	8.8	1.6	7.00	.05	24.7	1.0	24.70	.50	91.1	3.2	58.46	.06	52.0	0.0
28.1	14.60	-.02	7.2	1.6	6.96	-.02	23.7	0.9	24.27	.36	87.7	3.5	58.41	-.03	51.9	+0.2
Mar. 10.0	14.59	+0.1	5.6	1.5	6.96	+0.1	22.9	0.7	23.99	.21	84.1	3.7	58.39	.00	51.6	0.4
20.0	14.63	.06	4.2	1.3	6.99	.05	22.3	0.5	23.86	-.05	80.3	3.8	58.41	+0.3	51.1	0.6
30.0	14.71	.10	3.0	1.1	7.06	.09	21.9	-0.3	23.89	+1.1	76.5	3.8	58.46	.07	50.3	0.9
Apr. 9.0	14.84	.15	2.1	0.8	7.17	.13	21.8	0.0	24.07	.27	72.7	3.8	58.55	.11	49.3	1.1
19.0	15.01	.20	1.5	-0.4	7.33	.17	22.0	+0.3	24.41	.42	68.9	3.6	58.68	.15	48.1	1.3
28.9	15.23	.24	1.3	0.0	7.52	.21	22.5	0.6	24.91	.57	65.4	3.4	58.85	.19	46.6	1.5
May 8.9	15.48	.27	1.5	+0.4	7.75	.25	23.2	0.9	25.54	.70	62.1	3.1	59.06	.22	45.0	1.7
18.9	15.77	.30	2.0	0.8	8.02	.28	24.3	1.2	26.31	.82	59.1	2.8	59.30	.25	43.1	1.9
28.8	16.09	.33	3.0	1.1	8.31	.30	25.7	1.5	27.18	.92	56.5	2.4	59.57	.28	41.2	2.0
June 7.8	16.42	.34	4.3	1.5	8.62	.31	27.4	1.8	28.15	1.00	54.4	1.9	59.86	.30	39.1	2.0
17.8	16.77	.35	5.9	1.8	8.94	.32	29.2	1.9	29.18	1.06	52.7	1.4	60.17	.31	37.1	2.1
27.7	17.11	.34	7.9	2.0	9.26	.32	31.2	2.1	30.26	1.08	51.6	0.8	60.49	.31	35.0	2.0
July 7.7	17.45	.33	10.0	2.2	9.58	.31	33.3	2.1	31.34	1.09	51.1	+0.3	60.79	.31	33.1	1.9
17.7	17.77	.31	12.3	2.4	9.88	.29	35.5	2.1	32.41	1.05	51.1	-0.3	61.10	.29	31.2	1.7
27.7	18.06	.28	14.8	2.5	10.16	.27	37.6	2.1	33.43	.98	51.7	0.9	61.38	.27	29.6	1.6
Aug. 6.6	18.33	.25	17.3	2.5	10.41	.24	39.7	2.0	34.36	.89	52.9	1.4	61.64	.24	28.2	1.3
16.6	18.56	.21	19.8	2.5	10.63	.20	41.7	1.9	35.19	.78	54.5	1.9	61.87	.21	27.0	1.1
26.6	18.75	.17	22.2	2.4	10.81	.17	43.6	1.8	35.88	.61	56.7	2.3	62.06	.18	26.0	0.8
Sept. 5.6	18.90	.13	24.6	2.3	10.96	.13	45.2	1.6	36.40	.44	59.2	2.7	62.22	.14	25.4	0.6
15.5	19.00	.09	26.8	2.1	11.07	.09	46.7	1.4	36.76	.36	62.0	2.9	62.34	.10	25.0	+0.3
25.5	19.07	.05	28.8	1.9	11.14	.05	48.0	1.1	36.92	+0.7	65.0	3.1	62.43	.07	24.9	0.0
Oct. 5.5	19.10	+0.1	30.7	1.7	11.17	+0.1	49.0	0.9	36.90	-1.2	68.1	3.1	62.48	+0.3	25.0	-0.2
15.4	19.09	-.02	32.3	1.5	11.17	-.01	49.8	0.7	36.68	.31	71.2	3.0	62.49	.00	25.3	0.4
25.4	19.06	.05	33.6	1.2	11.15	.04	50.4	0.5	36.28	.40	74.1	2.8	62.49	-.03	25.9	0.6
Nov. 4.4	18.99	.08	34.7	0.9	11.09	.06	50.8	+0.2	35.72	.64	76.7	2.4	62.44	.06	26.5	0.7
14.4	18.90	.10	35.4	0.6	11.02	.08	50.9	0.0	35.02	.76	78.9	2.0	62.38	.07	27.3	0.8
24.3	18.80	.11	35.9	+0.3	10.93	.10	50.8	-0.2	34.20	.86	80.6	1.5	62.30	.09	28.1	0.8
Dec. 4.3	18.68	.13	36.0	0.0	10.83	.11	50.6	0.4	33.30	.93	81.8	0.9	62.20	.10	28.9	0.8
14.3	18.54	.14	35.9	-0.3	10.72	.11	50.1	0.5	32.35	.97	82.4	-0.3	62.10	.11	29.7	0.8
24.3	18.41	.14	35.4	0.6	10.60	.12	49.5	0.7	31.38	.97	82.4	+0.3	61.99	.11	30.5	0.7
34.2	18.27	-.14	34.6	-0.9	10.48	-.12	48.7	-0.9	30.42	-.94	81.8	+1.0	61.87	-.11	31.2	-0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Cassiopeæ.		β Ceti.		21 Cassiopeæ.		ϵ Piscium.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 0 33	^m +55° 53'	^h 0 37	^m -18° 37'	^h 0 37	^m +74° 20'	^h 0 56	^m +7° 15'
(Dec. 30.3)	^s 46.96 - .37	["] 26.8 - 0.3	^s 38.01 - .13	["] 85.4 - 0.6	^s 50.19 - .69	["] 40.3 + 0.3	^s 47.29 - .11	["] 4.5 - 0.7
Jan. 9.2	46.69 .98	26.4 0.7	37.88 .13	85.9 0.4	49.50 .69	40.2 - 0.4	47.17 .12	3.8 0.7
19.2	46.41 .97	25.4 1.2	37.75 .12	86.1 - 0.1	48.82 .67	39.6 1.0	47.05 .12	3.1 0.7
29.2	46.15 .95	24.0 1.6	37.64 .11	86.1 + 0.1	48.17 .62	38.3 1.5	46.94 .11	2.3 0.7
Feb. 8.1	45.91 .92	22.2 2.0	37.53 .10	85.8 0.4	47.58 .53	36.6 2.0	46.83 .10	1.7 0.6
18.1	45.71 .18	20.1 2.3	37.44 .08	85.3 0.7	47.07 .45	34.3 2.4	46.73 .09	1.1 0.6
28.1	45.56 .12	17.7 2.5	37.38 .05	84.4 1.0	46.67 .33	31.8 2.7	46.66 .08	0.6 0.4
Mar. 10.1	45.47 - .04	15.1 2.6	37.34 - .02	83.4 1.2	46.41 .30	28.9 2.9	46.61 - .03	0.2 0.3
20.0	45.44 + .01	12.6 2.5	37.33 + .01	82.0 1.5	46.28 - .05	25.9 3.0	46.59 .00	0.0 - 0.1
30.0	45.49 .08	10.1 2.4	37.37 .05	80.4 1.7	46.31 + .11	23.0 3.0	46.61 + .04	0.0 + 0.1
Apr. 9.0	45.61 .16	7.8 2.2	37.44 .09	78.6 1.9	46.49 .36	20.1 2.8	46.67 .08	0.3 0.4
19.0	45.81 .23	5.8 1.9	37.56 .14	76.6 2.1	46.83 .40	17.4 2.5	46.77 .12	0.8 0.6
28.9	46.07 .30	4.1 1.5	37.71 .18	74.4 2.2	47.30 .54	15.0 2.2	46.92 .17	1.6 0.9
May 8.9	46.41 .36	2.8 1.0	37.91 .22	72.2 2.3	47.90 .68	13.1 1.7	47.11 .21	2.6 1.1
18.9	46.79 .41	2.0 0.6	38.15 .25	69.8 2.4	48.61 .76	11.6 1.2	47.33 .24	3.8 1.4
28.9	47.22 .45	1.7 - 0.1	38.41 .28	67.5 2.3	49.40 .83	10.6 0.7	47.59 .27	5.3 1.6
June 7.8	47.68 .47	1.8 + 0.4	38.71 .30	65.1 2.3	50.26 .88	10.1 - 0.2	47.87 .29	7.0 1.7
17.8	48.17 .49	2.5 0.9	39.01 .32	62.9 2.1	51.16 .91	10.3 + 0.4	48.17 .31	8.8 1.9
27.8	48.66 .49	3.7 1.4	39.33 .32	60.8 2.0	52.07 .91	10.9 0.9	48.48 .32	10.7 1.9
July 7.7	49.15 .48	5.3 1.8	39.66 .32	59.0 1.7	52.97 .89	12.1 1.4	48.80 .31	12.7 2.0
17.7	49.61 .45	7.3 2.2	39.97 .31	57.4 1.5	53.84 .85	13.8 1.9	49.11 .30	14.6 1.9
27.7	50.05 .42	9.6 2.5	40.27 .29	56.1 1.1	54.66 .79	15.9 2.3	49.41 .29	16.5 1.8
Aug. 6.7	50.45 .38	12.3 2.8	40.54 .26	55.1 0.8	55.42 .72	18.5 2.7	49.68 .27	18.3 1.7
16.7	50.81 .33	15.2 3.0	40.79 .23	54.5 0.4	56.09 .63	21.4 3.1	49.93 .24	20.0 1.5
26.7	51.12 .28	18.2 3.1	41.00 .20	54.2 + 0.1	56.67 .53	24.6 3.3	50.15 .21	21.4 1.3
Sept. 5.6	51.37 .22	21.4 3.2	41.18 .16	54.3 - 0.3	57.14 .42	28.0 3.5	50.34 .17	22.6 1.1
15.6	51.57 .17	24.6 3.2	41.32 .12	54.7 0.6	57.51 .31	31.5 3.6	50.50 .14	23.7 0.9
25.5	51.71 .11	27.8 3.2	41.42 .08	55.4 0.8	57.76 .19	35.2 3.6	50.62 .10	24.5 0.7
Oct. 5.5	51.79 + .05	30.9 3.1	41.48 .04	56.4 1.1	57.89 + .07	38.8 3.6	50.70 .07	25.0 0.4
15.5	51.81 .00	33.9 2.9	41.50 + .01	57.5 1.2	57.90 - .04	42.4 3.5	50.75 .04	25.4 + 0.2
25.4	51.79 - .05	36.7 2.6	41.49 - .02	58.8 1.3	57.80 .16	45.8 3.3	50.77 + .01	25.5 0.0
Nov. 4.4	51.71 .10	39.2 2.3	41.45 .05	60.2 1.4	57.68 .27	49.0 3.0	50.77 - .02	25.4 - 0.1
14.4	51.58 .15	41.3 2.0	41.39 .08	61.6 1.4	57.25 .38	51.9 2.7	50.74 .04	25.2 0.3
24.3	51.42 .19	43.1 1.6	41.30 .09	62.9 1.3	56.83 .47	54.4 2.3	50.68 .06	24.9 0.4
Dec. 4.3	51.21 .22	44.5 1.1	41.20 .11	64.2 1.2	56.31 .55	56.4 1.8	50.61 .08	24.4 0.5
14.3	50.98 .25	45.4 0.6	41.08 .12	65.2 1.0	55.72 .62	57.9 1.2	50.52 .10	23.8 0.6
24.3	50.72 .27	45.7 + 0.1	40.96 .13	66.1 0.8	55.08 .67	58.8 + 0.6	50.42 .11	23.2 0.7
34.2	50.44 - .28	45.6 - 0.4	40.83 - .13	66.8 - 0.6	54.40 - .69	59.1 0.0	50.30 - .12	22.5 - 0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Andromedæ.		θ^1 Ceti.		38 Cassiopeæ.		η Piscium.									
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.								
	^h 1	^m 3	^h 1	^m 18	^h 1	^m 22	^h 1	^m 25								
(Dec. 30.3)	5.75	-15	38.1	-0.3	5.81	-11	50.4	-0.8	26.05	-47	29.6	+0.8	8.45	-11	64.7	-0.5
Jan. 9.3	5.00	.16	37.7	0.6	5.69	.12	51.1	0.7	25.57	.50	30.0	+0.9	8.33	.12	64.1	0.7
19.2	5.43	.16	36.9	0.9	5.57	.13	51.7	0.5	25.06	.51	29.9	-0.4	8.20	.13	63.4	0.7
29.2	5.37	.16	35.8	1.2	5.44	.13	52.1	0.3	24.55	.50	29.1	1.0	8.07	.13	62.6	0.8
Feb. 8.2	5.12	.14	34.5	1.4	5.32	.12	52.3	-0.1	24.06	.47	27.8	1.5	7.95	.12	61.8	0.8
18.1	4.99	.12	33.0	1.6	5.21	.10	52.2	+0.1	23.62	.49	26.1	2.0	7.83	.11	60.9	0.8
28.1	4.88	.09	31.3	1.7	5.11	.08	52.0	0.3	23.24	.34	23.9	2.3	7.73	.09	60.1	0.8
Mar. 10.1	4.80	.06	29.7	1.7	5.04	.06	51.5	0.6	22.94	.25	21.4	2.6	7.65	.06	59.4	0.6
20.1	4.77	-0.1	28.0	1.6	5.00	-0.2	50.8	0.8	22.74	.14	18.7	2.8	7.61	-0.2	58.9	0.5
30.0	4.78	+0.3	26.4	1.5	5.00	+0.1	49.9	1.1	22.66	-0.2	15.9	2.8	7.60	+0.1	58.4	0.3
Apr. 9.0	4.84	.09	25.1	1.3	5.03	.06	48.7	1.3	22.70	+1.0	13.0	2.8	7.63	.06	58.2	-0.1
19.0	4.96	.14	23.9	1.0	5.10	.10	47.3	1.5	22.86	.22	10.4	2.6	7.71	.10	58.2	+0.1
29.0	5.13	.19	23.1	0.7	5.22	.14	45.7	1.7	23.13	.33	7.9	2.3	7.84	.14	58.5	0.4
May 8.9	5.35	.24	22.6	-0.3	5.38	.18	43.8	1.9	23.52	.44	5.7	2.0	8.00	.19	59.0	0.7
18.9	5.61	.28	22.5	0.0	5.58	.22	41.9	2.0	24.01	.53	3.9	1.6	8.21	.23	59.8	0.9
28.9	5.91	.31	22.8	+0.4	5.82	.25	39.8	2.1	24.59	.61	2.6	1.1	8.46	.26	60.9	1.2
June 7.8	6.23	.34	23.4	0.8	6.08	.28	37.7	2.1	25.23	.67	1.8	0.6	8.74	.29	62.2	1.4
17.8	6.60	.36	24.4	1.1	6.37	.30	35.5	2.1	25.93	.71	1.4	-0.1	9.04	.31	63.7	1.6
27.8	6.96	.37	25.7	1.5	6.68	.31	33.4	2.0	26.66	.74	1.6	+0.4	9.35	.32	65.3	1.7
July 7.8	7.33	.36	27.4	1.7	6.99	.31	31.4	1.9	27.40	.74	2.3	0.9	9.67	.32	67.1	1.8
17.7	7.69	.35	29.3	2.0	7.30	.31	29.6	1.7	28.14	.73	3.5	1.4	9.99	.32	69.0	1.9
27.7	8.03	.33	31.3	2.1	7.60	.29	28.0	1.5	28.85	.70	5.1	1.8	10.30	.30	70.9	1.9
Aug. 6.7	8.35	.31	33.6	2.3	7.88	.27	26.6	1.2	29.53	.66	7.1	2.2	10.60	.28	72.7	1.8
16.6	8.65	.28	35.9	2.4	8.14	.25	25.5	0.9	30.16	.60	9.5	2.6	10.87	.26	74.5	1.7
26.6	8.91	.24	38.3	2.4	8.38	.22	24.7	0.6	30.74	.54	12.3	2.9	11.12	.23	76.1	1.6
Sept. 5.6	9.13	.21	40.7	2.4	8.58	.19	24.3	+0.3	31.24	.46	15.3	3.1	11.33	.20	77.7	1.4
15.6	9.32	.17	43.1	2.3	8.76	.15	24.1	0.0	31.66	.38	18.5	3.3	11.52	.17	79.0	1.3
25.5	9.47	.13	45.3	2.2	8.89	.12	24.3	-0.3	32.00	.30	21.9	3.4	11.67	.13	80.2	1.1
Oct. 5.5	9.58	.09	47.4	2.1	8.99	.08	24.7	0.5	32.26	.21	25.3	3.4	11.79	.10	81.1	0.9
15.5	9.64	.05	49.4	1.9	9.06	.05	25.4	0.8	32.42	.12	28.7	3.4	11.87	.07	81.9	0.7
25.5	9.68	+0.2	51.2	1.7	9.10	+0.2	26.2	0.9	32.49	+0.3	32.0	3.3	11.92	.04	82.5	0.5
Nov. 4.4	9.68	-0.2	52.7	1.4	9.11	-0.1	27.2	1.0	32.48	-0.6	35.2	3.1	11.95	+0.1	82.8	0.3
14.4	9.64	.05	54.0	1.2	9.08	.03	28.3	1.1	32.37	.15	38.1	2.8	11.94	-0.2	83.0	+0.1
24.4	9.58	.08	55.0	0.9	9.04	.06	29.4	1.1	32.17	.24	40.8	2.5	11.91	.04	83.0	-0.1
Dec. 4.3	9.49	.10	55.7	0.6	8.97	.08	30.5	1.1	31.89	.32	43.1	2.1	11.86	.06	82.9	0.2
14.3	9.38	.12	56.1	+0.3	8.89	.09	31.6	1.0	31.54	.39	44.9	1.6	11.78	.08	82.6	0.4
24.3	9.24	.14	56.2	0.0	8.78	.11	32.6	0.9	31.12	.44	46.2	1.1	11.69	.10	82.2	0.5
34.3	9.09	-1.5	55.9	-0.4	8.67	-1.2	33.4	-0.8	30.65	-4.7	47.0	+0.6	11.58	-1.2	81.6	-0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	<i>α</i> Eridani. (<i>Achernar</i> .)		<i>ο</i> Piscium.		<i>β</i> Arietis.		50 Cassiopeæ.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 1 33	^m -57° 49'	^h 1 39	^m +8° 33'	^h 1 48	^m +20° 13'	^h 1 53	^m +71° 50'
(Dec. 30.3)	^s 17.92 -33	101.5 -0.7	^s 8.13 -10	36.8 -0.7	^s 5.69 -11	43.7 -0.3	^s 21.18 -40	63.5 +1.3
Jan. 9.3	17.59 .34	101.9 -0.1	8.02 .19	36.1 0.7	5.57 .19	43.3 0.5	20.66 .55	64.4 +0.6
19.2	17.25 .34	101.8 +0.4	7.90 .13	35.4 0.7	5.44 .14	42.6 0.7	20.09 .58	64.7 0.6
29.2	16.91 .33	101.1 0.9	7.77 .13	34.8 0.7	5.30 .14	41.9 0.8	19.51 .59	64.4 -0.6
Feb. 8.2	16.59 .31	99.9 1.5	7.64 .13	34.1 0.6	5.16 .14	41.0 0.9	18.93 .57	63.5 1.1
18.1	16.29 .28	98.2 2.0	7.52 .11	33.5 0.6	5.03 .13	40.2 0.9	18.38 .58	62.1 1.6
28.1	16.02 .24	96.0 2.4	7.41 .10	33.0 0.5	4.90 .11	39.3 0.9	17.89 .45	60.2 2.1
Mar. 10.1	15.80 .20	93.4 2.8	7.32 .07	32.6 0.3	4.81 .08	38.3 0.9	17.48 .36	58.0 2.4
20.1	15.64 .14	90.5 3.1	7.27 -0.04	32.3 -0.3	4.74 .05	37.5 0.8	17.17 .35	55.4 2.6
30.0	15.53 .08	87.3 3.3	7.25 .00	32.3 0.0	4.71 -0.01	36.7 0.7	16.99 -0.12	52.7 2.8
Apr. 9.0	15.48 -0.01	83.9 3.5	7.27 +0.04	32.4 +0.2	4.72 +0.03	36.2 0.5	16.93 +0.01	49.9 2.6
19.0	15.50 +0.06	80.4 3.5	7.33 .08	32.8 0.5	4.78 .08	35.8 -0.2	17.01 .15	47.1 2.7
29.0	15.60 .13	76.9 3.6	7.43 .13	33.4 0.7	4.88 .13	35.7 0.0	17.22 .28	44.4 2.6
May 8.9	15.76 .20	73.3 3.5	7.58 .17	34.2 1.0	5.04 .18	35.8 +0.3	17.57 .41	42.0 2.3
18.9	15.99 .26	69.9 3.4	7.78 .21	35.3 1.2	5.23 .22	36.2 0.5	18.03 .52	39.9 1.9
28.9	16.29 .32	66.6 3.1	8.01 .25	36.6 1.4	5.47 .25	36.9 0.8	18.60 .62	38.2 1.5
June 7.8	16.64 .38	63.6 2.8	8.27 .27	38.1 1.6	5.74 .28	37.9 1.1	19.26 .70	36.9 1.0
17.8	17.04 .49	61.0 2.5	8.55 .30	39.7 1.7	6.04 .31	39.1 1.3	20.00 .76	36.1 0.6
27.8	17.47 .45	58.7 2.1	8.86 .31	41.4 1.8	6.36 .32	40.5 1.5	20.78 .80	35.8 -0.1
July 7.8	17.93 .47	56.8 1.6	9.17 .31	43.3 1.8	6.68 .33	42.0 1.6	21.59 .82	36.0 +0.4
17.7	18.40 .47	55.5 1.0	9.48 .31	45.1 1.8	7.01 .33	43.7 1.7	22.42 .82	36.7 0.9
27.7	18.87 .46	54.8 +0.5	9.79 .30	46.9 1.8	7.33 .32	45.5 1.8	23.24 .81	37.9 1.4
Aug. 6.7	19.32 .44	54.6 -0.1	10.09 .29	48.6 1.7	7.64 .30	47.3 1.8	24.03 .77	39.5 1.8
16.6	19.75 .41	55.0 0.7	10.36 .28	50.2 1.5	7.94 .28	49.1 1.8	24.78 .73	41.5 2.2
26.6	20.14 .36	56.0 1.2	10.61 .24	51.6 1.3	8.20 .25	50.8 1.7	25.48 .67	43.9 2.5
Sept. 5.6	20.47 .31	57.4 1.7	10.84 .21	52.9 1.1	8.44 .23	52.5 1.6	26.11 .59	46.6 2.8
15.6	20.75 .25	59.4 2.2	11.03 .18	53.9 0.9	8.65 .19	54.0 1.4	26.67 .51	49.6 3.1
25.5	20.97 .18	61.7 2.5	11.19 .14	54.7 0.7	8.83 .16	55.4 1.3	27.14 .43	52.7 3.2
Oct. 5.5	21.12 .11	64.4 2.8	11.32 .11	55.3 0.5	8.98 .13	56.6 1.1	27.52 .33	56.0 3.3
15.5	21.19 +0.04	67.3 2.9	11.41 .08	55.6 0.3	9.09 .10	57.6 0.9	27.80 .23	59.4 3.4
25.5	21.20 -0.03	70.3 3.0	11.48 .05	55.8 +0.1	9.17 .06	58.5 0.8	27.99 .13	62.7 3.3
Nov. 4.4	21.13 .10	73.3 2.9	11.52 +0.02	55.7 -0.1	9.22 .03	59.1 0.6	28.06 +0.02	66.0 3.2
14.4	21.01 .16	76.1 2.7	11.52 .00	55.6 0.2	9.24 +0.01	59.6 0.4	28.03 -0.06	69.2 3.0
24.4	20.82 .21	78.7 2.4	11.51 -0.03	55.3 0.4	9.24 -0.02	60.0 +0.2	27.90 .19	72.1 2.8
Dec. 4.3	20.59 .25	81.0 2.1	11.46 .05	54.8 0.5	9.20 .05	60.1 0.0	27.66 .29	74.6 2.4
14.3	20.32 .29	82.8 1.6	11.40 .08	54.3 0.6	9.14 .07	60.1 -0.1	27.33 .38	76.8 2.0
24.3	20.01 .32	84.1 1.1	11.31 .10	53.7 0.6	9.05 .10	59.8 0.3	26.91 .46	78.5 1.5
34.3	19.68 -0.34	85.0 -0.6	11.20 -0.11	53.0 -0.6	8.94 -0.12	59.5 -0.4	26.42 -0.53	79.7 +1.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Arietis.		ζ^1 Ceti.		ι Cassiopeiæ.		ζ^2 Ceti.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 2	^m 0	^h 2	^m 6	^h 2	^m 19	^h 2	^m 21
		+22° 53'		+8° 17'		+66° 51'		+7° 55'
(Dec. 30.3)	29.75	−.11	43.28	−.09	19.78	−.34	51.73	−.09
Jan. 9.3	29.63	.13	43.17	.11	19.41	.39	51.63	.11
19.2	29.50	.14	43.05	.13	18.99	.43	51.51	.13
29.2	29.36	.15	42.92	.14	18.55	.45	51.38	.14
Feb. 8.2	29.21	.15	42.78	.14	18.10	.45	51.23	.14
18.2	29.06	.14	42.65	.13	17.66	.43	51.09	.14
28.2	28.93	.12	42.52	.12	17.25	.39	50.96	.13
Mar. 10.1	28.82	.10	42.41	.09	16.89	.39	50.84	.11
20.1	28.74	.08	42.33	.06	16.61	.34	50.75	.08
30.1	28.70	−.02	42.28	−.03	16.42	.15	50.69	−.04
Apr. 9.1	28.69	+0.02	42.28	+0.01	16.33	−.04	50.67	.00
19.0	28.74	.07	42.31	.06	16.34	+0.07	50.69	+0.04
29.0	28.84	.12	42.30	.10	16.46	.18	50.75	.08
May 9.0	28.98	.17	42.52	.15	16.69	.28	50.86	.13
18.9	29.17	.21	42.69	.19	17.02	.38	51.02	.17
28.9	29.40	.25	42.89	.23	17.45	.47	51.21	.21
June 7.9	29.67	.28	43.14	.26	17.95	.54	51.44	.25
17.9	29.96	.31	43.41	.28	18.52	.60	51.71	.27
27.8	30.28	.39	43.70	.30	19.15	.64	51.99	.29
July 7.8	30.61	.33	44.01	.31	19.80	.67	52.29	.30
17.8	30.95	.33	44.32	.31	20.48	.68	52.60	.31
27.7	31.28	.33	44.63	.31	21.15	.67	52.91	.31
Aug. 6.7	31.60	.31	44.93	.29	21.82	.66	53.22	.30
16.7	31.90	.29	45.22	.26	22.46	.63	53.51	.28
26.7	32.18	.27	45.48	.25	23.07	.59	53.78	.26
Sept. 5.6	32.43	.24	45.72	.23	23.63	.54	54.03	.24
15.6	32.66	.21	45.94	.20	24.14	.48	54.26	.21
25.6	32.85	.18	46.12	.17	24.58	.41	54.46	.19
Oct. 5.6	33.02	.15	46.28	.14	24.96	.34	54.62	.16
15.5	33.15	.12	46.40	.11	25.26	.27	54.76	.13
25.5	33.25	.08	46.50	.06	25.49	.19	54.87	.10
Nov. 4.5	33.31	.05	46.56	.05	25.64	.10	54.95	.07
14.4	33.35	+0.02	46.59	+0.02	25.70	+0.02	55.00	.04
24.4	33.35	−.01	46.60	−.01	25.67	−.07	55.02	+0.01
Dec. 4.4	33.32	.04	46.58	.03	25.56	.15	55.01	−.02
14.4	33.27	.07	46.53	.06	25.37	.23	54.98	.05
24.3	33.19	.09	46.46	.08	25.10	.30	54.91	.07
34.3	33.08	−.11	46.36	−.10	24.77	−.37	54.82	−.10

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Ceti.		α Ceti.		48 Cephei (H.)		ζ Arietis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 2 37	^m +2° 44'	^h 2 56	^m +3° 37'	^h 3 5	^m +77° 17'	^h 3 8	^m +20° 36'
(Dec. 30.3)	^s 9.88 -.08	^s 4.7 -0.8	^s 5.45 -.07	^s 23.0 -0.8	^s 22.69 -.55	^s 61.8 +2.1	^s 5.89 -.07	^s 16.9 -0.1
Jan. 9.3	9.79 .11	3.9 0.7	5.37 .10	22.2 0.7	22.07 .68	63.6 1.6	5.80 .10	16.7 0.3
19.2	9.67 .13	3.2 0.7	5.26 .12	21.5 0.7	21.34 .78	64.9 1.0	5.69 .13	16.4 0.4
29.2	9.54 .14	2.5 0.6	5.12 .14	20.9 0.6	20.52 .85	65.7 +0.5	5.55 .15	16.0 0.5
Feb. 8.2	9.39 .15	2.0 0.5	4.98 .15	20.3 0.5	19.65 .88	65.8 -0.1	5.40 .16	15.4 0.5
18.2	9.25 .14	1.6 0.4	4.83 .15	19.9 0.4	18.77 .87	65.4 0.7	5.24 .16	14.9 0.6
28.2	9.11 .13	1.3 0.2	4.68 .14	19.5 0.3	17.92 .82	64.4 1.3	5.08 .16	14.2 0.7
Mar. 10.1	8.98 .12	1.1 -0.1	4.54 .13	19.4 -0.1	17.13 .74	62.8 1.8	4.92 .14	13.5 0.7
20.1	8.87 .09	1.2 +0.1	4.42 .10	19.3 0.0	16.45 .62	60.8 2.2	4.79 .12	12.9 0.7
30.1	8.80 .06	1.4 0.3	4.33 .07	19.4 +0.2	15.91 .47	58.5 2.5	4.69 .08	12.2 0.6
Apr. 9.1	8.76 -.02	1.8 0.5	4.28 -.04	19.8 0.4	15.53 .30	55.8 2.7	4.62 -.04	11.7 0.5
19.0	8.76 +.02	2.4 0.7	4.26 +.01	20.3 0.6	15.32 -.11	53.0 2.9	4.60 .00	11.3 0.4
29.0	8.81 .07	3.2 0.9	4.29 .05	21.0 0.8	15.30 +.06	50.1 2.9	4.63 +.05	11.0 -0.2
May 9.0	8.90 .11	4.2 1.1	4.37 .10	22.0 1.0	15.47 .27	47.3 2.8	4.70 .10	10.9 0.0
19.0	9.04 .16	5.4 1.3	4.49 .14	23.1 1.2	15.83 .45	44.6 2.6	4.82 .15	11.0 +0.2
28.9	9.22 .20	6.8 1.5	4.65 .16	24.4 1.4	16.36 .61	42.1 2.3	4.99 .19	11.3 0.4
June 7.9	9.43 .23	8.4 1.6	4.85 .22	25.9 1.5	17.05 .76	40.0 2.0	5.20 .23	11.8 0.6
17.9	9.68 .26	10.1 1.7	5.09 .25	27.5 1.6	17.88 .89	38.1 1.6	5.45 .26	12.5 0.8
27.8	9.95 .28	11.8 1.8	5.35 .27	29.1 1.7	18.83 1.00	36.8 1.2	5.73 .28	13.5 1.0
July 7.8	10.25 .30	13.6 1.8	5.64 .29	30.8 1.7	19.87 1.08	35.8 0.7	6.03 .31	14.5 1.1
17.8	10.55 .31	15.3 1.7	5.93 .30	32.5 1.6	20.98 1.13	35.4 -0.2	6.34 .32	15.7 1.2
27.7	10.85 .30	17.0 1.6	6.24 .30	34.1 1.5	22.13 1.16	35.4 +0.3	6.67 .32	17.0 1.3
Aug. 6.7	11.15 .30	18.5 1.4	6.54 .30	35.6 1.4	23.29 1.16	35.9 0.7	6.99 .32	18.3 1.3
16.7	11.45 .28	19.9 1.3	6.83 .29	36.9 1.2	24.45 1.15	36.8 1.1	7.31 .31	19.6 1.3
26.7	11.72 .27	21.0 1.0	7.12 .27	38.1 1.0	25.58 1.11	38.1 1.6	7.61 .30	20.9 1.3
Sept. 5.6	11.98 .24	21.9 0.8	7.38 .26	38.9 0.8	26.66 1.05	39.9 2.0	7.90 .28	22.2 1.2
15.6	12.21 .22	22.6 0.5	7.63 .23	39.6 0.5	27.67 .97	42.1 2.3	8.17 .26	23.3 1.1
25.6	12.42 .19	23.0 +0.3	7.85 .21	40.0 +0.3	28.60 .88	44.6 2.6	8.42 .23	24.4 1.0
Oct. 5.6	12.60 .16	23.1 0.0	8.05 .18	40.1 0.0	29.42 .77	47.3 2.9	8.64 .21	25.3 0.8
15.5	12.75 .14	23.0 -0.2	8.21 .15	40.0 -0.2	30.13 .64	50.3 3.1	8.84 .19	26.1 0.7
25.5	12.87 .11	22.7 0.4	8.36 .13	39.7 0.4	30.71 .50	53.5 3.2	9.01 .15	26.7 0.6
Nov. 4.5	12.95 .08	22.2 0.6	8.47 .10	39.2 0.6	31.14 .35	56.7 3.3	9.15 .12	27.2 0.4
14.4	13.02 .04	21.5 0.7	8.55 .07	38.6 0.7	31.41 .19	60.0 3.3	9.25 .09	27.6 0.3
24.4	13.05 +.01	20.8 0.8	8.60 +.03	37.9 0.8	31.52 +.03	63.2 3.2	9.32 .06	27.9 0.2
Dec. 4.4	13.05 -.01	20.0 0.8	8.62 .00	37.1 0.8	31.46 -.14	66.3 3.0	9.36 +.02	28.0 +0.1
14.4	13.02 .04	19.1 0.8	8.60 -.03	36.2 0.8	31.23 .31	69.1 2.7	9.37 -.01	28.1 0.0
24.3	12.97 .07	18.3 0.8	8.56 .06	35.4 0.8	30.84 .47	71.7 2.3	9.33 .05	28.0 -0.1
34.3	12.89 -.10	17.4 -0.8	8.49 -.09	34.6 -0.8	30.30 -.61	73.8 +1.9	9.27 -.08	27.9 -0.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Persei.		ϵ Eridani.		δ Persei.		η Tauri.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 3 15	^m +49° 26'	^h 3 27	^m -9° 51'	^h 3 34	^m +47° 24'	^h 3 40	^m +23° 44'
(Dec. 30.4)	52.85 ^s -11	25.1 ["] +1.1	21.40 ^s -07	43.0 ["] -1.3	30.36 ^s -09	32.8 ["] +1.1	27.04 ^s -04	16.8 ["] 0.0
Jan. 9.3	52.71 ^s .16	26.0 ["] 0.8	21.31 ^s .10	44.3 ["] 1.2	30.25 ^s .14	33.8 ["] 0.8	26.98 ^s .08	16.8 ["] -0.1
19.3	52.53 ^s .30	26.7 ["] 0.4	21.20 ^s .13	45.4 ["] 1.0	30.09 ^s .18	34.5 ["] 0.5	26.88 ^s .12	16.6 ["] 0.2
29.3	52.31 ^s .33	26.9 ["] +0.1	21.06 ^s .15	46.2 ["] 0.7	29.89 ^s .21	34.8 ["] +0.2	26.74 ^s .14	16.4 ["] 0.3
Feb. 8.2	52.06 ^s .36	26.8 ["] -0.3	20.91 ^s .16	46.8 ["] 0.5	29.66 ^s .24	34.8 ["] -0.2	26.59 ^s .16	16.1 ["] 0.4
18.2	51.81 ^s .36	26.3 ["] 0.7	20.74 ^s .17	47.2 ["] -0.2	29.42 ^s .26	34.5 ["] 0.5	26.42 ^s .17	15.6 ["] 0.5
28.2	51.55 ^s .36	25.4 ["] 1.0	20.57 ^s .17	47.3 ["] 0.0	29.17 ^s .26	33.8 ["] 0.9	26.25 ^s .17	15.1 ["] 0.6
Mar. 10.2	51.31 ^s .33	24.2 ["] 1.3	20.41 ^s .16	47.1 ["] +0.3	28.93 ^s .23	32.7 ["] 1.2	26.07 ^s .16	14.5 ["] 0.6
20.1	51.11 ^s .19	22.8 ["] 1.6	20.26 ^s .14	46.7 ["] 0.5	28.72 ^s .20	31.4 ["] 1.4	25.92 ^s .14	13.8 ["] 0.7
30.1	50.94 ^s .14	21.1 ["] 1.7	20.14 ^s .11	46.0 ["] 0.8	28.54 ^s .15	29.9 ["] 1.6	25.79 ^s .11	13.1 ["] 0.7
Apr. 9.1	50.83 ^s .08	19.3 ["] 1.8	20.05 ^s .07	45.1 ["] 1.1	28.41 ^s .10	28.3 ["] 1.7	25.70 ^s .07	12.5 ["] 0.6
19.1	50.78 ^s -02	17.5 ["] 1.8	20.00 ^s -03	43.9 ["] 1.3	28.34 ^s -04	26.6 ["] 1.7	25.64 ^s -03	11.9 ["] 0.5
29.0	50.79 ^s +06	15.7 ["] 1.8	19.99 ^s +01	42.5 ["] 1.5	28.33 ^s +02	24.9 ["] 1.7	25.64 ^s +02	11.4 ["] 0.4
May 9.0	50.87 ^s .19	13.9 ["] 1.7	20.02 ^s .06	40.9 ["] 1.7	28.39 ^s .09	23.3 ["] 1.6	25.68 ^s .07	11.1 ["] 0.3
19.0	51.03 ^s .19	12.3 ["] 1.5	20.10 ^s .10	39.1 ["] 1.9	28.51 ^s .16	21.8 ["] 1.4	25.77 ^s .12	10.9 ["] -0.1
28.9	51.24 ^s .26	11.0 ["] 1.2	20.22 ^s .14	37.2 ["] 2.0	28.70 ^s .22	20.5 ["] 1.2	25.92 ^s .16	10.9 ["] +0.1
June 7.9	51.52 ^s .30	9.9 ["] 0.9	20.39 ^s .18	35.1 ["] 2.1	28.94 ^s .27	19.4 ["] 1.0	26.10 ^s .21	11.1 ["] 0.3
17.9	51.84 ^s .36	9.1 ["] 0.6	20.59 ^s .23	33.0 ["] 2.1	29.24 ^s .32	18.5 ["] 0.7	26.33 ^s .25	11.5 ["] 0.5
27.9	52.21 ^s .36	8.6 ["] -0.3	20.82 ^s .26	30.9 ["] 2.1	29.58 ^s .36	18.0 ["] 0.4	26.59 ^s .28	12.1 ["] 0.6
July 7.8	52.62 ^s .42	8.5 ["] 0.0	21.09 ^s .27	28.9 ["] 2.0	29.96 ^s .39	17.8 ["] -0.1	26.88 ^s .30	12.8 ["] 0.8
17.8	53.04 ^s .43	8.7 ["] +0.4	21.36 ^s .29	26.9 ["] 1.8	30.36 ^s .41	17.9 ["] +0.2	27.19 ^s .32	13.7 ["] 0.9
27.8	53.48 ^s .44	9.2 ["] 0.7	21.65 ^s .29	25.2 ["] 1.6	30.78 ^s .42	18.3 ["] 0.5	27.51 ^s .32	14.7 ["] 1.0
Aug. 6.8	53.92 ^s .44	10.0 ["] 1.0	21.95 ^s .29	23.7 ["] 1.4	31.21 ^s .43	18.9 ["] 0.8	27.84 ^s .33	15.8 ["] 1.1
16.7	54.36 ^s .43	11.1 ["] 1.2	22.24 ^s .29	22.4 ["] 1.1	31.63 ^s .42	19.8 ["] 1.0	28.16 ^s .32	16.9 ["] 1.1
26.7	54.79 ^s .42	12.4 ["] 1.4	22.53 ^s .26	21.5 ["] 0.8	32.05 ^s .41	21.0 ["] 1.2	28.48 ^s .31	18.0 ["] 1.1
Sept. 5.7	55.20 ^s .29	14.0 ["] 1.6	22.80 ^s .27	20.9 ["] +0.4	32.46 ^s .39	22.3 ["] 1.4	28.79 ^s .30	19.0 ["] 1.0
15.6	55.58 ^s .37	15.7 ["] 1.8	23.06 ^s .26	20.7 ["] 0.0	32.84 ^s .37	23.8 ["] 1.6	29.09 ^s .28	20.1 ["] 1.0
25.6	55.93 ^s .34	17.5 ["] 1.9	23.30 ^s .23	20.8 ["] -0.3	33.20 ^s .35	25.4 ["] 1.7	29.36 ^s .27	21.0 ["] 0.9
Oct. 5.6	56.25 ^s .30	19.5 ["] 2.0	23.51 ^s .20	21.4 ["] 0.7	33.53 ^s .31	27.2 ["] 1.8	29.62 ^s .24	21.9 ["] 0.8
15.6	56.54 ^s .26	21.6 ["] 2.1	23.70 ^s .17	22.2 ["] 1.0	33.83 ^s .28	29.0 ["] 1.9	29.85 ^s .22	22.6 ["] 0.7
25.5	56.78 ^s .22	23.7 ["] 2.1	23.86 ^s .15	23.3 ["] 1.2	34.09 ^s .24	30.9 ["] 1.9	30.05 ^s .19	23.3 ["] 0.6
Nov. 4.5	56.98 ^s .18	25.8 ["] 2.1	24.00 ^s .12	24.6 ["] 1.4	34.31 ^s .20	32.8 ["] 1.9	30.23 ^s .16	23.9 ["] 0.5
14.5	57.13 ^s .13	27.9 ["] 2.0	24.10 ^s .08	26.1 ["] 1.5	34.48 ^s .15	34.7 ["] 1.8	30.37 ^s .13	24.4 ["] 0.4
24.5	57.23 ^s .08	29.9 ["] 1.9	24.17 ^s .06	27.7 ["] 1.6	34.61 ^s .10	36.5 ["] 1.8	30.48 ^s .09	24.7 ["] 0.3
Dec. 4.4	57.28 ^s +02	31.7 ["] 1.8	24.20 ^s +02	29.3 ["] 1.6	34.69 ^s +05	38.2 ["] 1.7	30.55 ^s .05	25.1 ["] 0.3
14.4	57.28 ^s -03	33.4 ["] 1.6	24.20 ^s -02	30.9 ["] 1.5	34.71 ^s .00	39.8 ["] 1.5	30.59 ^s +01	25.3 ["] 0.2
24.4	57.22 ^s .09	34.8 ["] 1.3	24.17 ^s .06	32.4 ["] 1.4	34.68 ^s -06	41.2 ["] 1.3	30.58 ^s -02	25.4 ["] +0.1
34.4	57.11 ^s -14	36.0 ["] +1.0	24.10 ^s -06	33.8 ["] -1.3	34.60 ^s -11	42.3 ["] +1.0	30.54 ^s -06	25.4 ["] 0.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Persei.		γ ¹ Eridani.		γ Tauri.		ε Tauri.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 3 46	^m +31° 31'	^h 3 52	^m -13° 50'	^h 4 13	^m +15° 20'	^h 4 21	^m +18° 54'
(Dec. 30.4)	^s 41.74 -.05	^s 52.6 +0.4	^s 30.72 -.05	^s 54.8 -1.6	^s 3.68 -.02	^s 24.4 -0.4	^s 42.55 -.01	^s 58.7 -0.2
Jan. 9.3	41.67 .09	53.0 0.3	30.64 .09	56.2 1.4	3.64 .06	24.0 0.4	42.52 .05	58.5 0.2
19.3	41.57 .12	53.2 +0.1	30.54 .12	57.5 1.2	3.57 .09	23.6 0.4	42.45 .09	58.3 0.2
29.3	41.43 .15	53.2 -0.1	30.41 .15	58.6 1.0	3.46 .12	23.3 0.4	42.34 .12	58.0 0.2
Feb. 8.3	41.28 .18	53.0 0.3	30.25 .16	59.3 0.6	3.32 .15	22.9 0.4	42.20 .15	57.7 0.2
18.2	41.08 .19	52.6 0.5	30.08 .18	59.8 -0.3	3.16 .17	22.5 0.4	42.04 .17	57.4 0.2
28.2	40.89 .19	52.0 0.6	29.90 .18	59.9 0.0	2.99 .17	22.1 0.4	41.87 .18	57.1 0.2
Mar. 10.2	40.70 .18	51.3 0.8	29.72 .17	59.8 +0.3	2.82 .17	21.7 0.4	41.69 .17	56.7 0.4
20.2	40.53 .16	50.5 0.9	29.56 .15	59.4 0.6	2.66 .15	21.4 0.3	41.52 .16	56.3 0.4
30.1	40.49 .13	49.6 0.9	29.42 .13	58.6 0.9	2.51 .13	21.1 0.3	41.37 .14	55.9 0.4
Apr. 9.1	40.28 .09	48.6 1.0	29.31 .10	57.6 1.1	2.40 .10	20.9 0.2	41.25 .10	55.5 0.2
19.1	40.22 -.04	47.7 0.9	29.23 .06	56.4 1.4	2.32 .06	20.7 -0.1	41.17 .06	55.2 0.2
29.0	40.20 +0.1	46.8 0.8	29.19 -.01	54.9 1.6	2.28 -.01	20.7 0.0	41.12 -.02	55.0 -0.1
May 9.0	40.24 .07	46.0 0.7	29.20 +0.3	53.1 1.8	2.29 +0.3	20.8 +0.2	41.12 +0.3	54.9 0.0
19.0	40.33 .12	45.3 0.6	29.25 .08	51.2 2.0	2.35 .08	21.1 0.3	41.17 .07	54.9 +0.1
29.0	40.48 .17	44.9 0.4	29.35 .12	49.1 2.1	2.45 .12	21.5 0.5	41.27 .12	55.1 0.2
June 7.9	40.67 .21	44.6 -0.2	29.50 .16	46.9 2.2	2.60 .17	22.0 0.6	41.41 .16	55.4 0.4
17.9	40.91 .26	44.5 0.0	29.68 .20	44.7 2.2	2.79 .21	22.7 0.8	41.60 .20	55.9 0.5
27.9	41.18 .29	44.7 +0.3	29.89 .23	42.5 2.2	3.01 .24	23.6 0.9	41.82 .24	56.5 0.6
July 7.9	41.48 .32	45.0 0.4	30.14 .26	40.3 2.1	3.26 .26	24.5 1.0	42.07 .26	57.2 0.8
17.8	41.81 .33	45.6 0.6	30.41 .28	38.3 1.9	3.54 .29	25.5 1.0	42.34 .29	58.0 0.8
27.8	42.15 .34	46.3 0.8	30.60 .29	36.4 1.7	3.83 .30	26.5 1.0	42.64 .30	58.9 0.9
Aug. 6.8	42.50 .35	47.1 0.9	30.98 .29	34.8 1.4	4.13 .31	27.6 1.0	42.94 .31	59.8 0.9
16.7	42.84 .35	48.1 1.0	31.28 .29	33.6 1.0	4.44 .31	28.5 1.0	43.26 .31	60.6 0.9
26.7	43.19 .34	49.2 1.1	31.57 .29	32.7 0.7	4.75 .30	29.5 0.9	43.57 .31	61.5 0.8
Sept. 5.7	43.52 .33	50.2 1.1	31.85 .28	32.1 +0.3	5.05 .30	30.3 0.7	43.88 .30	62.2 0.7
15.7	43.84 .31	51.4 1.1	32.13 .26	32.0 -0.1	5.34 .29	30.9 0.6	44.18 .29	62.9 0.6
25.6	44.14 .29	52.5 1.1	32.38 .25	32.3 0.5	5.62 .27	31.4 0.4	44.47 .28	63.5 0.5
Oct. 5.6	44.41 .27	53.6 1.1	32.62 .22	32.9 0.8	5.88 .25	31.8 0.3	44.74 .26	63.9 0.4
15.6	44.67 .24	54.7 1.1	32.83 .20	33.9 1.2	6.12 .23	32.0 +0.1	44.99 .24	64.2 0.3
25.6	44.90 .21	55.7 1.0	33.01 .17	35.2 1.5	6.35 .21	32.1 0.0	45.23 .22	64.4 0.2
Nov. 4.5	45.09 .18	56.7 1.0	33.17 .14	36.8 1.7	6.54 .18	32.1 -0.1	45.44 .20	64.5 +0.1
14.5	45.25 .14	57.6 0.9	33.29 .11	38.6 1.8	6.71 .15	31.9 0.2	45.62 .17	64.6 0.0
24.5	45.37 .10	58.5 0.8	33.39 .08	40.5 1.9	6.85 .12	31.7 0.3	45.77 .13	64.5 -0.1
Dec. 4.4	45.46 .06	59.3 0.7	33.45 +0.4	42.4 1.9	6.95 .08	31.4 0.3	45.88 .09	64.4 0.1
14.4	45.50 +0.2	60.0 0.6	33.47 .00	44.3 1.8	7.01 +0.4	31.0 0.3	45.96 .05	64.3 0.1
24.4	45.50 -0.2	60.5 0.5	33.45 -0.3	46.1 1.7	7.04 .00	30.7 0.4	45.99 +0.1	64.1 0.2
34.4	45.46 -0.7	61.0 +0.4	33.40 -0.7	47.7 -1.5	7.02 -0.4	30.3 -0.4	45.98 -0.3	64.0 -0.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Tauri. (Aldebaran)		α Camelopardalis.		ϵ Aurigæ.		β Orionis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h ^m 4 29	[°] ['] +16 16	^h ^m 4 42	[°] ['] +66 8	^h ^m 4 49	[°] ['] +32 58	^h ^m 4 57	[°] ['] +15 14
(Dec. 30.4)	^s 8.00 .00	["] 10.7 -0.3	^s 18.60 -0.06	["] 26.7 +2.3	^s 17.54 +0.1	["] 38.8 +0.6	^s 48.65 +0.08	["] 14.8 -0.4
Jan. 9.4	7.97 -.04	10.4 0.3	18.48 .16	28.9 2.0	17.53 -.04	39.4 0.5	48.65 -.02	14.4 0.4
19.4	7.91 .08	10.0 0.3	18.37 .25	30.7 1.7	17.47 .08	39.9 0.4	48.61 .06	14.1 0.4
29.3	7.81 .19	9.7 0.3	17.98 .33	32.3 1.3	17.37 .19	40.3 0.3	48.52 .10	13.7 0.3
Feb. 8.3	7.67 .15	9.4 0.3	17.61 .40	33.4 0.9	17.22 .16	40.5 +0.1	48.40 .13	13.4 0.3
18.3	7.52 .16	9.0 0.3	17.19 .44	34.0 +0.4	17.05 .19	40.5 -0.1	48.25 .16	13.1 0.3
28.2	7.34 .17	8.7 0.3	16.73 .46	34.1 -0.1	16.85 .20	40.4 0.2	48.08 .17	12.8 0.3
Mar. 10.2	7.17 .17	8.3 0.3	16.26 .46	33.8 0.6	16.65 .20	40.0 0.4	47.91 .18	12.6 0.3
20.2	7.00 .16	8.0 0.3	15.81 .43	33.0 1.1	16.45 .19	39.6 0.6	47.73 .17	12.3 0.3
30.2	6.85 .14	7.7 0.3	15.40 .38	31.7 1.5	16.26 .17	38.9 0.7	47.57 .15	12.1 0.2
Apr. 9.1	6.72 .11	7.4 0.3	15.05 .38	30.1 1.8	16.11 .14	38.2 0.8	47.43 .13	12.0 0.1
19.1	6.63 .07	7.3 -0.1	14.77 .34	28.1 2.1	15.99 .10	37.4 0.8	47.32 .09	11.9 -0.1
29.1	6.58 -.03	7.2 0.0	14.58 .14	25.9 2.3	15.91 -.05	36.5 0.8	47.24 .05	11.8 0.0
May 9.1	6.58 +0.02	7.2 +0.1	14.49 -.04	23.6 2.4	15.88 .00	35.7 0.8	47.21 -.01	11.9 +0.1
19.0	6.62 .06	7.4 0.3	14.50 +0.06	21.2 2.4	15.91 +0.05	34.9 0.8	47.23 +0.04	12.1 0.2
29.0	6.71 .11	7.7 0.4	14.62 .17	18.8 2.3	15.99 .10	34.2 0.7	47.29 .08	12.4 0.4
June 8.0	6.84 .15	8.1 0.5	14.84 .26	16.5 2.3	16.12 .15	33.6 0.5	47.39 .13	12.8 0.5
17.9	7.01 .19	8.7 0.6	15.15 .36	14.3 2.1	16.30 .20	33.1 0.4	47.54 .17	13.3 0.6
27.9	7.22 .23	9.4 0.8	15.55 .44	12.4 1.8	16.52 .24	32.8 0.2	47.72 .20	14.0 0.7
July 7.9	7.47 .25	10.2 0.8	16.02 .51	10.7 1.5	16.77 .27	32.6 -0.1	47.94 .23	14.7 0.7
17.9	7.73 .28	11.1 0.9	16.56 .57	9.3 1.3	17.06 .30	32.6 +0.1	48.19 .26	15.4 0.8
27.8	8.02 .29	12.0 0.9	17.15 .61	8.3 0.9	17.38 .32	32.7 0.2	48.46 .28	16.2 0.8
Aug. 6.8	8.32 .30	12.9 0.9	17.78 .64	7.6 0.5	17.71 .34	33.0 0.3	48.74 .29	17.0 0.8
16.8	8.62 .31	13.8 0.8	18.44 .67	7.3 -0.2	18.05 .35	33.4 0.4	49.03 .30	17.8 0.7
26.8	8.93 .31	14.6 0.8	19.11 .68	7.3 +0.2	18.40 .35	33.8 0.5	49.33 .30	18.4 0.6
Sept. 5.7	9.24 .30	15.3 0.7	19.79 .67	7.7 0.5	18.74 .35	34.3 0.5	49.64 .30	19.0 0.5
15.7	9.53 .29	15.9 0.5	20.46 .66	8.4 0.9	19.09 .34	34.9 0.6	49.94 .30	19.4 0.3
25.7	9.82 .28	16.3 0.4	21.12 .64	9.4 1.3	19.42 .33	35.5 0.6	50.23 .29	19.7 0.2
Oct. 5.6	10.09 .26	16.7 0.2	21.74 .61	10.8 1.5	19.75 .32	36.1 0.6	50.52 .28	19.8 +0.1
15.6	10.35 .25	16.8 +0.1	22.33 .57	12.5 1.8	20.05 .30	36.8 0.6	50.79 .26	19.8 -0.1
25.6	10.58 .22	16.9 0.0	22.88 .51	14.4 2.0	20.34 .28	37.4 0.7	51.04 .25	19.6 0.2
Nov. 4.6	10.80 .20	16.8 -0.1	23.36 .45	16.5 2.3	20.60 .25	38.1 0.7	51.28 .22	19.3 0.3
14.5	10.98 .17	16.6 0.2	23.77 .37	18.9 2.4	20.84 .22	38.8 0.7	51.49 .19	19.0 0.4
24.5	11.13 .14	16.4 0.3	24.11 .29	21.3 2.5	21.04 .18	39.5 0.7	51.67 .16	18.6 0.4
Dec. 4.5	11.25 .10	16.1 0.3	24.36 .20	23.9 2.5	21.19 .14	40.1 0.7	51.82 .13	18.1 0.4
14.5	11.33 .08	15.8 0.3	24.51 +0.10	26.4 2.5	21.31 .09	40.8 0.7	51.93 .09	17.7 0.4
24.4	11.37 +0.02	15.5 0.3	24.55 .00	28.8 2.4	21.37 +0.04	41.5 0.6	51.99 +0.04	17.3 0.4
34.4	11.37 -.02	15.1 -0.3	24.50 -0.10	31.1 +2.2	21.39 .00	42.1 +0.6	52.01 .00	16.8 -0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Aurigæ. (<i>Capella</i> .)		β Orionis. (<i>Rigel</i> .)		β Tauri.		Groombridge 966.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 5 7	$^{\circ}$ $'$ +45 52	h m 5 8	$^{\circ}$ $'$ -8 20	h m 5 18	$^{\circ}$ $'$ +28 30	h m 5 23	$^{\circ}$ $'$ +74 57
(Dec. 30.4)	57.35 +.04	35.3 +1.4	51.44 +.02	27.1 -1.7	48.99 +.05	21.3 +0.4	57.40 .00	47.5 +2.8
Jan. 9.4	57.35 -.03	36.6 1.2	51.43 -.03	28.8 1.5	49.01 -.01	21.7 0.3	57.31 -.17	50.2 2.6
19.4	57.29 .09	37.8 1.1	51.38 .07	30.2 1.4	48.98 .06	22.0 0.3	57.06 .32	52.7 2.3
29.4	57.17 .15	38.7 0.8	51.29 .11	31.5 1.1	48.90 .10	22.2 0.2	56.67 .46	54.8 2.0
Feb. 8.3	57.00 .19	39.5 0.6	51.16 .14	32.5 0.9	48.79 .14	22.4 +0.1	56.14 .50	56.6 1.6
18.3	56.79 .22	39.9 +0.3	51.01 .16	33.3 0.6	48.63 .17	22.5 0.0	55.50 .68	57.9 1.1
28.3	56.55 .25	40.1 0.0	50.84 .18	33.8 0.4	48.45 .19	22.5 -0.1	54.79 .74	58.7 +0.5
Mar. 10.2	56.30 .35	39.9 -0.3	50.66 .18	34.0 -0.1	48.26 .20	22.3 0.3	54.04 .76	58.9 0.0
20.2	56.05 .24	39.5 0.6	50.47 .18	34.0 +0.1	48.06 .19	22.1 0.3	53.29 .74	58.6 -0.6
30.2	55.81 .22	38.7 0.9	50.30 .16	33.8 0.4	47.87 .18	21.7 0.4	52.56 .69	57.7 1.1
Apr. 9.2	55.61 .19	37.8 1.1	50.15 .14	33.3 0.6	47.71 .15	21.2 0.5	51.90 .62	56.4 1.5
19.1	55.43 .14	36.6 1.3	50.02 .11	32.5 0.9	47.57 .12	20.7 0.5	51.34 .51	54.6 1.9
29.1	55.32 .09	35.3 1.4	49.93 .07	31.6 1.1	47.48 .07	20.1 0.6	50.89 .38	52.5 2.3
May 9.1	55.25 -.03	33.8 1.5	49.88 -.03	30.4 1.3	47.43 -.03	19.6 0.6	50.57 .24	50.1 2.5
19.1	55.25 +.03	32.4 1.5	49.87 +.01	29.0 1.5	47.42 +.02	19.0 0.5	50.41 -.09	47.5 2.7
29.0	55.32 .09	30.9 1.4	49.90 .06	27.4 1.6	47.47 .07	18.5 0.5	50.40 +.07	44.8 2.7
June 8.0	55.44 .15	29.5 1.3	49.97 .10	25.7 1.8	47.56 .12	18.1 0.4	50.54 .22	42.1 2.7
18.0	55.62 .30	28.2 1.2	50.09 .14	23.9 1.8	47.70 .16	17.7 0.3	50.84 .37	39.4 2.6
27.9	55.85 .26	27.1 1.1	50.25 .17	22.0 1.9	47.89 .20	17.6 0.2	51.28 .51	36.8 2.5
July 7.9	56.13 .30	26.1 0.9	50.43 .20	20.2 1.8	48.11 .24	17.4 -0.1	51.85 .63	34.4 2.3
17.9	56.45 .34	25.4 0.7	50.65 .23	18.4 1.7	48.36 .27	17.4 +0.1	52.53 .74	32.3 2.0
27.9	56.80 .36	24.8 0.5	50.89 .25	16.7 1.6	48.64 .29	17.5 0.1	53.32 .83	30.5 1.7
Aug. 6.8	57.18 .39	24.4 -0.3	51.15 .27	15.2 1.4	48.94 .31	17.7 0.2	54.19 .91	29.0 1.3
16.8	57.58 .40	24.2 0.0	51.42 .28	13.9 1.1	49.26 .32	17.9 0.2	55.13 .97	27.9 1.0
26.8	57.98 .41	24.3 +0.2	51.71 .28	12.9 0.8	49.58 .33	18.2 0.3	56.12 1.01	27.2 0.6
Sept. 5.8	58.39 .41	24.4 0.3	51.99 .29	12.3 0.5	49.91 .33	18.5 0.3	57.14 1.03	26.8 -0.2
15.7	58.81 .41	24.8 0.4	52.28 .28	12.0 +0.1	50.24 .33	18.7 0.3	58.17 1.06	26.9 +0.3
25.7	59.21 .40	25.3 0.6	52.56 .28	12.0 -0.2	50.57 .33	19.0 0.3	59.20 1.02	27.3 0.6
Oct. 5.7	59.61 .39	26.0 0.8	52.83 .27	12.5 0.6	50.89 .32	19.3 0.3	60.21 .99	28.1 1.0
15.6	59.99 .37	26.8 0.9	53.09 .25	13.3 1.0	51.20 .30	19.5 0.2	61.18 .94	29.3 1.4
25.6	60.35 .34	27.8 1.0	53.34 .23	14.4 1.3	51.50 .29	19.8 0.2	62.09 .88	30.9 1.7
Nov. 4.6	60.68 .31	28.9 1.1	53.56 .21	15.8 1.5	51.78 .26	20.0 0.2	62.93 .79	32.9 2.1
14.6	60.97 .28	30.1 1.3	53.76 .19	17.4 1.7	52.03 .24	20.2 0.3	63.67 .68	35.1 2.3
24.5	61.23 .23	31.4 1.3	53.93 .15	19.1 1.8	52.25 .20	20.5 0.3	64.29 .56	37.6 2.6
Dec. 4.5	61.44 .18	32.7 1.4	54.07 .12	21.0 1.9	52.43 .16	20.8 0.3	64.78 .42	40.3 2.7
14.5	61.59 .12	34.1 1.4	54.17 .08	22.9 1.9	52.58 .12	21.1 0.3	65.12 .26	43.1 2.8
24.5	61.69 +.07	35.5 1.4	54.23 +.04	24.7 1.8	52.67 .07	21.4 0.3	65.30 +1.0	45.9 2.8
34.4	61.72 .00	36.9 +1.3	54.24 -.01	26.4 -1.6	52.72 +.02	21.8 +0.4	65.31 -.07	48.7 +2.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Orionis.		α Leporis.		ϵ Orionis.		α Columbe.	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	^h 5 ^m 25	[°] -0 ['] 23	^h 5 ^m 27	[°] -17 ['] 54	^h 5 ^m 30	[°] -1 ['] 16	^h 5 ^m 35	[°] -34 ['] 8
(Dec. 30.4)	58.01 +.04	20.2 -1.4	31.21 +.02	34.1 -2.2	12.89 +.04	46.8 -1.4	22.80 .00	22.9 -2.9
Jan. 9.4	58.03 -.01	21.5 1.3	31.20 -.03	36.3 2.0	12.90 .00	48.2 1.3	22.78 -.05	25.7 2.7
19.4	58.00 .05	22.7 1.1	31.16 .07	38.2 1.8	12.88 -.03	49.4 1.1	22.70 .10	28.2 2.4
29.4	57.93 .09	23.7 0.9	31.07 .11	39.9 1.5	12.81 .09	50.4 1.0	22.58 .14	30.4 2.0
Feb. 8.3	57.82 .12	24.5 0.7	30.94 .14	41.3 1.2	12.70 .12	51.3 0.8	22.41 .18	32.2 1.6
18.3	57.68 .15	25.1 0.6	30.78 .17	42.3 0.9	12.57 .15	52.0 0.6	22.21 .21	33.6 1.2
28.3	57.52 .17	25.0 0.4	30.60 .19	43.0 0.5	12.40 .17	52.5 0.4	21.90 .23	34.5 0.7
Mar. 10.3	57.34 .18	25.9 -0.2	30.40 .20	43.4 -0.2	12.23 .18	52.8 -0.2	21.75 .24	35.0 -0.3
20.2	57.17 .17	26.0 0.0	30.20 .19	43.4 +0.1	12.05 .18	52.9 0.0	21.50 .24	35.1 +0.2
30.2	56.99 .16	25.9 +0.2	30.01 .18	43.1 0.5	11.88 .16	52.8 +0.2	21.26 .23	34.7 0.6
Apr. 9.2	56.84 .14	25.7 0.3	29.84 .16	42.5 0.8	11.72 .14	52.6 0.4	21.04 .21	33.8 1.0
19.1	56.71 .11	25.2 0.5	29.60 .13	41.5 1.1	11.59 .12	52.1 0.6	20.84 .18	32.6 1.4
29.1	56.61 .08	24.6 0.7	29.57 .10	40.3 1.4	11.49 .08	51.5 0.7	20.68 .14	30.9 1.8
May 9.1	56.55 -.04	23.8 0.9	29.40 .06	38.8 1.6	11.43 -.04	50.6 0.9	20.56 .10	29.0 2.1
19.1	56.54 .00	22.9 1.0	29.45 -.02	37.1 1.8	11.40 .00	49.6 1.1	20.48 .05	26.7 2.4
29.0	56.56 +.05	21.8 1.2	29.46 +.03	35.1 2.0	11.42 +.04	48.5 1.2	20.45 -.01	24.2 2.6
June 8.0	56.63 .09	20.5 1.3	29.51 .07	33.0 2.2	11.48 .09	47.2 1.3	20.47 +.04	21.5 2.7
18.0	56.73 .13	19.2 1.4	29.60 .11	30.8 2.2	11.50 .12	45.0 1.4	20.54 .09	18.7 2.8
28.0	56.88 .16	17.8 1.4	29.73 .15	28.6 2.2	11.73 .16	44.4 1.5	20.65 .13	15.9 2.8
July 7.9	57.06 .19	16.4 1.4	29.90 .18	26.3 2.2	11.90 .19	43.0 1.4	20.81 .17	13.1 2.7
17.9	57.27 .22	15.0 1.4	30.10 .21	24.2 2.1	12.11 .22	41.5 1.4	21.00 .21	10.4 2.6
27.9	57.50 .24	13.6 1.3	30.32 .24	22.2 1.9	12.34 .24	40.2 1.3	21.23 .24	7.9 2.4
Aug. 6.8	57.75 .26	12.4 1.1	30.57 .26	20.4 1.6	12.59 .26	38.0 1.2	21.49 .27	5.7 2.0
16.8	58.02 .27	11.3 0.9	30.84 .27	18.9 1.3	12.85 .27	37.9 1.0	21.77 .29	3.8 1.6
26.8	58.30 .28	10.5 0.7	31.12 .28	17.7 1.0	13.13 .28	37.0 0.7	22.07 .31	2.4 1.2
Sept. 5.8	58.58 .28	9.9 0.4	31.41 .29	17.0 0.6	13.41 .28	36.4 0.5	22.38 .31	1.5 0.7
15.7	58.87 .29	9.6 +0.2	31.70 .29	16.6 +0.1	13.70 .29	36.1 +0.2	22.70 .32	1.1 +0.1
25.7	59.16 .28	9.6 -0.1	31.99 .29	16.7 -0.3	13.98 .28	36.1 -0.2	23.01 .32	1.3 -0.4
Oct. 5.7	59.43 .27	9.9 0.4	32.27 .28	17.3 0.8	14.26 .28	36.4 0.5	23.33 .31	2.0 1.0
15.7	59.70 .26	10.5 0.7	32.54 .27	18.3 1.2	14.53 .27	37.0 0.8	23.63 .29	3.3 1.5
25.6	59.96 .25	11.3 1.0	32.80 .25	19.7 1.6	14.79 .25	37.9 1.0	23.91 .27	5.1 2.0
Nov. 4.6	60.20 .23	12.4 1.2	33.04 .23	21.5 1.9	15.04 .23	39.0 1.2	24.17 .24	7.3 2.4
14.6	60.42 .20	13.7 1.3	33.25 .20	23.5 2.2	15.26 .21	40.4 1.4	24.40 .21	9.9 2.7
24.5	60.61 .18	15.1 1.4	33.44 .17	25.8 2.3	15.45 .18	41.8 1.5	24.59 .17	12.8 3.0
Dec. 4.5	60.77 .14	16.5 1.5	33.59 .13	28.2 2.4	15.61 .15	43.3 1.5	24.74 .13	15.9 3.1
14.5	60.89 .10	18.0 1.5	33.70 .09	30.6 2.4	15.74 .11	44.9 1.5	24.84 .08	19.0 3.0
24.5	60.98 .06	19.5 1.4	33.76 +.04	32.9 2.3	15.82 .06	46.4 1.5	24.90 +.03	22.0 2.9
34.4	61.01 +.01	20.7 -1.2	33.78 .00	35.2 -2.1	15.87 +.02	47.8 -1.4	24.90 -.02	25.0 -2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Orionis.		ν Orionis.		22 Camelop. (H.)		μ Geminorum.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 5	^m 48	^h 6	^m 0	^h 6	^m 5	^h 6	^m 15
		[°] +7		[°] +14		[°] +69		[°] +22
		['] 22		['] 46		['] 21		['] 34
(Dec. 30.5)	46.25 +.06	58.9 -1.0	49.28 +.08	47.2 -0.6	49.79 +.14	32.4 +2.6	48.43 +.10	21.0 -0.1
Jan. 9.5	46.29 +.02	58.0 0.9	49.35 +.03	46.7 0.5	49.86 +.01	35.0 2.5	48.51 +.05	20.9 0.0
19.4	46.28 -.03	57.2 0.8	49.36 -.01	46.3 0.4	49.80 -.19	37.4 2.3	48.54 .00	20.9 0.0
29.4	46.23 .07	56.5 0.6	49.32 .06	45.9 0.3	49.62 .94	39.6 2.1	48.51 -.05	21.0 +0.1
Feb. 8.4	46.14 .11	55.9 0.5	49.23 .10	45.7 0.2	49.33 .34	41.6 1.8	48.43 .10	21.1 0.1
18.3	46.01 .14	55.4 0.4	49.11 .14	45.5 0.2	48.94 .43	43.2 1.4	48.32 .13	21.2 0.1
28.3	45.86 .16	55.1 0.3	48.96 .16	45.3 0.1	48.48 .49	44.4 1.0	48.17 .16	21.3 +0.1
Mar. 10.3	45.69 .17	54.8 0.2	48.79 .18	45.2 0.1	47.96 .53	45.1 +0.5	47.99 .18	21.3 0.0
20.3	45.51 .18	54.7 -0.1	48.61 .18	45.1 0.1	47.41 .55	45.3 0.0	47.81 .19	21.3 0.0
30.2	45.34 .17	54.7 0.0	48.43 .17	45.0 -0.1	46.87 .53	45.0 -0.5	47.62 .18	21.3 -0.1
Apr. 9.2	45.18 .15	54.7 +0.1	48.27 .16	45.0 0.0	46.36 .49	44.3 1.0	47.45 .17	21.2 0.1
19.2	45.04 .12	54.9 0.2	48.12 .13	45.0 0.0	45.90 .43	43.0 1.4	47.29 .14	21.0 0.2
29.2	44.93 .09	55.2 0.4	48.01 .10	45.0 +0.1	45.51 .35	41.4 1.8	47.16 .11	20.8 0.2
May 9.1	44.86 .05	55.6 0.5	47.93 .06	45.1 0.1	45.21 .25	39.5 2.1	47.07 .07	20.6 0.2
19.1	44.83 -.01	56.1 0.6	47.89 -.02	45.3 0.2	45.01 .15	37.2 2.3	47.02 -.03	20.4 0.2
29.1	44.84 +.03	56.8 0.7	47.89 +.02	45.5 0.3	44.91 -.04	34.8 2.5	47.01 +.01	20.2 0.2
June 8.0	44.89 .07	57.5 0.8	47.93 .07	45.8 0.3	44.93 +.08	32.3 2.5	47.04 .06	20.1 0.1
18.0	44.99 .11	58.4 0.9	48.02 .11	46.2 0.4	45.06 .19	29.8 2.6	47.12 .10	20.0 0.1
28.0	45.12 .15	59.3 0.9	48.15 .14	46.6 0.5	45.30 .39	27.3 2.5	47.24 .14	19.9 -0.1
July 8.0	45.28 .18	60.2 0.9	48.31 .18	47.1 0.5	45.64 .39	24.8 2.4	47.40 .17	19.9 0.0
17.9	45.48 .21	61.2 1.0	48.50 .21	47.6 0.5	46.07 .47	22.5 2.2	47.59 .21	19.9 0.0
27.9	45.70 .23	62.1 0.9	48.73 .23	48.1 0.5	46.59 .55	20.4 2.0	47.81 .23	19.9 0.0
Aug. 6.9	45.95 .25	62.9 0.8	48.97 .26	48.6 0.5	47.18 .62	18.6 1.7	48.06 .26	20.0 0.0
16.9	46.21 .27	63.7 0.7	49.24 .27	49.0 0.4	47.83 .67	17.1 1.4	48.33 .28	20.0 0.0
26.8	46.49 .28	64.3 0.5	49.52 .29	49.4 0.3	48.53 .72	15.8 1.1	48.61 .29	20.0 0.0
Sept. 5.8	46.77 .29	64.7 0.3	49.81 .29	49.6 +0.2	49.26 .75	14.9 0.8	48.91 .30	19.9 -0.1
15.8	47.06 .29	64.9 +0.1	50.10 .30	49.7 0.0	50.02 .77	14.3 -0.4	49.23 .31	19.8 0.2
25.7	47.35 .29	64.9 -0.1	50.40 .30	49.6 -0.1	50.79 .78	14.1 0.0	49.53 .32	19.6 0.2
Oct. 5.7	47.64 .29	64.7 0.3	50.71 .30	49.4 0.3	51.57 .77	14.2 +0.3	49.85 .33	19.3 0.3
15.7	47.93 .28	64.2 0.6	51.00 .29	49.0 0.4	52.33 .76	14.7 0.7	50.17 .31	19.0 0.4
25.7	48.20 .27	63.6 0.7	51.29 .28	48.5 0.6	53.08 .72	15.6 1.0	50.48 .31	18.6 0.4
Nov. 4.6	48.46 .25	62.7 0.9	51.57 .27	47.9 0.6	53.78 .67	16.8 1.4	50.78 .29	18.2 0.4
14.6	48.70 .23	61.8 1.0	51.83 .25	47.2 0.7	54.42 .61	18.4 1.7	51.06 .27	17.8 0.4
24.6	48.92 .20	60.7 1.1	52.07 .22	46.5 0.7	54.99 .53	20.2 2.0	51.32 .25	17.4 0.4
Dec. 4.6	49.11 .17	59.6 1.1	52.27 .19	45.8 0.7	55.49 .44	22.4 2.2	51.55 .21	17.0 0.3
14.5	49.26 .13	58.5 1.1	52.44 .15	45.1 0.7	55.86 .33	24.7 2.4	51.75 .17	16.8 0.2
24.5	49.37 .09	57.5 1.0	52.57 .11	44.4 0.6	56.13 .21	27.2 2.5	51.90 .13	16.6 0.2
34.5	49.44 +.04	56.5 -0.9	52.66 +.06	43.9 -0.5	56.28 +.08	29.7 +2.6	52.01 +.08	16.4 -0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Argus. (Canopus.)		γ Geminorum.		α Canis Majoris. (Sirius.)		ϵ Canis Majoris.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	^h ^m 6 21	[°] ['] -52° 37'	^h ^m 6 30	[°] ['] +16° 29'	^h ^m 6 39	[°] ['] -16° 33'	^h ^m 6 53	[°] ['] -28° 48'
(Dec. 30.5)	^s 21.43 +.01	["] 55.5 -3.6	^s 52.87 +.11	["] 54.6 -0.5	^s 56.57 +.09	["] 19.3 -2.5	^s 59.36 +.10	["] 43.3 -3.0
Jan. 9.5	21.40 -.06	59.0 3.4	52.96 .06	54.1 0.4	56.63 +.04	21.8 2.3	59.43 +.04	46.3 2.9
19.4	21.31 .13	62.3 3.1	52.99 +.01	53.8 0.3	56.65 -.01	24.0 2.1	59.44 -.01	49.1 2.7
29.4	21.15 .19	65.2 2.8	52.98 -.04	53.5 0.2	56.62 .05	26.0 1.9	59.41 .06	51.7 2.4
Feb. 8.4	20.93 .25	67.8 2.4	52.92 .06	53.3 0.1	56.55 .10	27.8 1.6	59.32 .11	53.9 2.1
18.4	20.65 .39	69.9 1.9	52.82 .12	53.2 -0.1	56.43 .13	29.3 1.3	59.19 .15	55.8 1.7
28.3	20.34 .33	71.6 1.4	52.68 .15	53.2 0.0	56.28 .16	30.4 1.0	59.03 .18	57.4 1.4
Mar. 10.3	20.00 .35	72.7 0.9	52.52 .17	53.1 0.0	56.11 .18	31.2 0.7	58.83 .20	58.6 1.0
20.3	19.64 .36	73.3 -0.4	52.34 .18	53.1 0.0	55.92 .19	31.7 -0.3	58.62 .22	59.3 0.5
30.3	19.28 .35	73.4 +0.2	52.16 .18	53.1 0.0	55.72 .19	31.9 0.0	58.40 .22	59.7 -0.1
Apr. 9.2	18.93 .34	73.0 0.7	51.99 .16	53.1 0.0	55.54 .18	31.8 +0.3	58.18 .21	59.6 +0.3
19.2	18.60 .31	72.1 1.2	51.83 .14	53.2 0.0	55.36 .16	31.3 0.6	57.98 .20	59.1 0.7
29.2	18.31 .28	70.7 1.6	51.70 .12	53.2 0.0	55.21 .14	30.6 0.9	57.79 .17	58.3 1.0
May 9.2	18.05 .23	68.8 2.0	51.60 .08	53.3 0.0	55.06 .11	29.5 1.2	57.64 .14	57.1 1.4
19.1	17.85 .18	66.6 2.4	51.54 -.04	53.3 +0.1	54.99 .07	28.3 1.4	57.51 .10	55.5 1.7
29.1	17.70 .12	64.0 2.7	51.52 .00	53.5 0.1	54.94 -.03	26.7 1.6	57.43 .07	53.7 2.0
June 8.1	17.61 -.06	61.2 2.9	51.54 +.04	53.6 0.1	54.93 +.01	25.0 1.8	57.38 -.03	51.6 2.2
18.0	17.57 .00	58.2 3.1	51.60 .06	53.9 0.2	54.95 .04	23.2 1.9	57.38 +.02	49.3 2.4
28.0	17.60 +.06	55.0 3.2	51.70 .12	54.1 0.2	55.02 .06	21.2 2.0	57.42 .06	46.8 2.5
July 8.0	17.69 .12	51.8 3.2	51.84 .15	54.4 0.3	55.12 .12	19.2 2.0	57.49 .10	44.4 2.5
18.0	17.84 .18	48.7 3.1	52.01 .18	54.7 0.3	55.25 .15	17.3 1.9	57.61 .13	41.9 2.4
27.9	18.04 .23	45.7 2.8	52.21 .21	55.0 0.3	55.42 .18	15.4 1.8	57.76 .17	39.5 2.3
Aug. 6.9	18.29 .28	43.0 2.5	52.43 .24	55.2 0.3	55.61 .21	13.6 1.6	57.94 .20	37.2 2.1
16.9	18.59 .32	40.7 2.2	52.68 .26	55.4 0.2	55.83 .23	12.1 1.4	58.16 .23	35.3 1.8
26.8	18.93 .33	38.7 1.7	52.95 .27	55.5 0.2	56.08 .25	10.9 1.0	58.40 .25	33.6 1.5
Sept. 5.8	19.29 .38	37.3 1.1	53.23 .29	55.5 +0.1	56.34 .27	10.1 0.7	58.67 .27	32.3 1.0
15.8	19.68 .40	36.4 +0.5	53.52 .30	55.4 -0.1	56.61 .28	9.6 +0.3	58.95 .28	31.5 +0.6
25.8	20.09 .41	36.2 -0.1	53.82 .30	55.2 0.2	56.89 .29	9.5 -0.2	59.25 .30	31.2 0.0
Oct. 5.7	20.50 .41	36.6 0.7	54.12 .31	54.8 0.3	57.19 .29	9.9 0.6	59.56 .31	31.5 -0.5
15.7	20.90 .40	37.7 1.4	54.43 .31	54.3 0.4	57.48 .29	10.7 1.1	59.87 .31	32.3 1.0
25.7	21.29 .37	39.3 2.0	54.73 .30	53.7 0.6	57.77 .29	12.0 1.5	60.18 .31	33.5 1.5
Nov. 4.7	21.65 .34	41.6 2.5	55.03 .29	53.0 0.7	58.05 .28	13.6 1.8	60.48 .29	35.3 2.0
14.6	21.97 .30	44.3 2.9	55.31 .27	52.2 0.7	58.32 .26	15.6 2.1	60.77 .28	37.5 2.4
24.6	22.25 .25	47.4 3.3	55.57 .25	51.4 0.8	58.56 .23	17.8 2.3	61.04 .25	40.1 2.7
Dec. 4.6	22.48 .19	50.8 3.5	55.81 .22	50.6 0.8	58.78 .20	20.3 2.5	61.27 .21	42.9 2.9
14.5	22.64 .13	54.4 3.6	56.01 .18	49.9 0.7	58.96 .16	22.8 2.5	61.46 .17	45.9 3.0
24.5	22.73 +.06	58.1 3.6	56.17 .14	49.3 0.6	59.10 .12	25.4 2.5	61.61 .13	48.9 3.1
34.5	22.75 -.02	61.7 -3.5	56.29 +.09	48.8 -0.5	59.20 +.07	27.9 -2.4	61.71 +.07	52.0 -3.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Canis Majoris.		δ Geminorum.		Piazzii vii. 67.		α Geminorum. (Castor.)	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 7	^m 3	^h 7	^m 13	^h 7	^m 18	^h 7	^m 27
		^s -26° 12'		^s +22° 11'		^s +68° 41'		^s +32° 8'
(Dec. 30.5)	35.54 +.11	21.7 -3.0	3.63 +.16	54.2 -0.3	35.11 +.33	75.4 +2.3	3.29 +.19	45.9 +0.2
Jan. 9.5	35.63 .06	24.6 2.8	3.77 .11	54.0 -0.2	35.37 .30	77.8 2.4	3.45 .13	46.2 0.4
19.5	35.66 +.01	27.4 2.6	3.85 +.06	53.9 0.0	35.50 +.07	80.2 2.5	3.55 .08	46.7 0.6
29.5	35.64 -.05	29.9 2.4	3.88 .00	53.9 +0.1	35.51 -.05	82.7 2.4	3.60 +.02	47.3 0.7
Feb. 8.4	35.57 .09	32.1 2.1	3.85 -.05	54.1 0.2	35.39 .18	85.1 2.3	3.59 -.04	48.0 0.7
18.4	35.45 .14	34.0 1.7	3.78 .09	54.3 0.2	35.15 .29	87.3 2.1	3.52 .09	48.7 0.7
28.4	35.30 .17	35.6 1.4	3.67 .13	54.5 0.3	34.81 .38	89.2 1.7	3.40 .13	49.4 0.7
Mar. 10.3	35.12 .19	36.8 1.0	3.52 .16	54.8 0.3	34.39 .45	90.7 1.3	3.25 .17	50.1 0.6
20.3	34.92 .21	37.6 0.6	3.35 .18	55.1 0.2	33.89 .50	91.9 0.9	3.07 .19	50.6 0.5
30.3	34.70 .21	38.0 -0.2	3.17 .18	55.2 0.2	33.39 .51	92.5 +0.4	2.88 .20	51.0 0.3
Apr. 9.3	34.50 .20	37.9 +0.2	2.99 .18	55.4 +0.1	32.87 .51	92.6 -0.1	2.68 .20	51.3 +0.2
19.2	34.30 .19	37.6 0.6	2.82 .16	55.5 0.0	32.36 .49	92.3 0.6	2.49 .18	51.3 0.0
29.2	34.12 .17	36.8 0.9	2.66 .14	55.5 0.0	31.89 .44	91.5 1.0	2.31 .16	51.3 -0.1
May 9.2	33.96 .14	35.7 1.3	2.54 .11	55.4 -0.1	31.48 .38	90.2 1.4	2.16 .13	51.0 0.2
19.1	33.84 .10	34.3 1.6	2.44 .07	55.4 0.1	31.15 .30	88.6 1.8	2.05 .10	50.6 0.4
29.1	33.76 .07	32.6 1.6	2.39 -.04	55.2 0.1	30.90 .21	86.6 2.1	1.97 .06	50.1 0.6
June 8.1	33.71 -.03	30.6 2.1	2.37 .00	55.1 0.1	30.75 .11	84.4 2.3	1.94 -.01	49.5 0.6
18.1	33.70 +.01	28.5 2.2	2.39 +.04	55.0 0.2	30.69 -.01	81.9 2.5	1.95 +.03	48.8 0.7
28.0	33.73 .05	26.2 2.3	2.45 .08	54.8 0.2	30.73 +.09	79.3 2.6	2.00 .07	48.1 0.8
July 8.0	33.80 .09	23.8 2.4	2.55 .11	54.6 0.2	30.88 .19	76.7 2.7	2.09 .11	47.3 0.6
18.0	33.91 .13	21.4 2.3	2.68 .15	54.4 0.2	31.12 .28	74.0 2.6	2.22 .15	46.5 0.8
28.0	34.05 .16	19.1 2.2	2.84 .18	54.2 0.2	31.45 .37	71.4 2.6	2.38 .18	45.7 0.8
Aug. 6.9	34.23 .19	17.0 2.0	3.04 .21	54.0 0.3	31.86 .45	68.9 2.4	2.58 .21	44.8 0.9
16.9	34.43 .22	15.1 1.8	3.26 .23	53.7 0.3	32.35 .52	66.6 2.3	2.81 .24	43.9 0.9
26.9	34.66 .24	13.5 1.4	3.50 .26	53.3 0.4	32.91 .58	64.4 2.0	3.06 .27	43.0 0.9
Sept. 5.9	34.92 .27	12.3 1.0	3.77 .27	52.9 0.5	33.52 .64	62.5 1.8	3.35 .29	42.2 0.9
15.8	35.19 .28	11.5 0.6	4.05 .29	52.4 0.6	34.19 .68	60.9 1.5	3.65 .31	41.3 0.9
25.8	35.49 .30	11.1 +0.1	4.35 .30	51.8 0.6	34.69 .72	59.5 1.3	3.96 .33	40.4 0.9
Oct. 5.8	35.79 .31	11.3 -0.5	4.66 .32	51.1 0.7	35.63 .74	58.5 0.8	4.30 .34	39.5 0.9
15.7	36.10 .31	12.1 1.0	4.98 .32	50.4 0.8	36.38 .76	57.9 0.5	4.64 .35	38.6 0.8
25.7	36.41 .31	13.3 1.5	5.30 .32	49.6 0.8	37.14 .75	57.7 -0.1	5.00 .35	37.8 0.8
Nov. 4.7	36.71 .30	15.0 1.9	5.62 .32	48.8 0.8	37.89 .73	57.8 +0.3	5.35 .36	37.1 0.7
14.7	37.00 .28	17.1 2.3	5.94 .31	47.9 0.8	38.61 .70	58.4 0.8	5.70 .34	36.4 0.6
24.6	37.27 .26	19.6 2.6	6.24 .29	47.2 0.7	39.29 .65	59.4 1.2	6.03 .32	36.0 0.4
Dec. 4.6	37.51 .22	22.3 2.8	6.52 .27	46.5 0.6	39.90 .58	60.8 1.5	6.34 .30	35.6 -0.2
14.6	37.72 .18	25.2 2.9	6.77 .23	45.9 0.5	40.44 .49	62.5 1.9	6.62 .28	35.5 0.0
24.6	37.88 .14	28.1 3.0	6.98 .19	45.4 0.4	40.88 .39	64.5 2.2	6.86 .22	35.6 +0.2
34.5	37.99 +.09	31.1 -2.9	7.15 +.14	45.1 -0.2	41.21 +.27	66.8 +2.4	7.05 +.16	35.8 +0.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Canis Minoris. (Procyon.)		β Geminorum. (Pollux.)		ϕ Geminorum.		3 Ursæ Majoris (H.)	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h ^m 7 33	+ [°] 31'	^h ^m 7 38	+ [°] 16'	^h ^m 7 46	+ [°] 4'	^h ^m 8 0	+ [°] 48'
(Dec. 30.5)	^s 6.73 +.16	38.8 -1.4	^s 4.77 +.19	36.4 -0.1	^s 15.54 +.30	12.8 -0.3	^s 62.91 +.43	68.0 +2.0
Jan. 9.5	6.87 .11	37.4 1.3	4.93 .14	36.5 +0.1	15.71 .15	12.8 0.0	63.27 .31	70.2 2.3
19.5	6.96 .07	36.2 1.1	5.04 .08	36.7 0.3	15.83 .09	12.9 +0.3	63.51 .18	72.6 2.5
29.5	7.00 +.01	35.2 0.9	5.10 +.03	37.1 0.4	15.90 +.04	13.2 0.4	63.62 +.05	75.1 2.5
Feb. 8.4	6.99 -.03	34.4 0.8	5.10 -.03	37.6 0.5	15.91 -.02	13.6 0.5	63.60 -.06	77.6 2.5
18.4	6.93 .08	33.7 0.6	5.04 .08	38.1 0.6	15.86 .07	14.1 0.5	63.46 .30	80.1 2.4
28.4	6.83 .11	33.2 0.4	4.94 .12	38.7 0.6	15.77 .11	14.7 0.6	63.20 .30	82.3 2.1
Mar. 10.3	6.70 .14	32.9 0.2	4.80 .15	39.3 0.5	15.64 .15	15.3 0.5	62.84 .39	84.2 1.8
20.3	6.55 .16	32.7 -0.1	4.63 .16	39.8 0.5	15.48 .17	15.8 0.5	62.41 .46	85.8 1.4
30.3	6.39 .17	32.7 0.0	4.45 .19	40.2 0.4	15.30 .18	16.2 0.4	61.93 .50	87.0 0.9
Apr. 9.3	6.22 .17	32.8 +0.1	4.25 .19	40.5 0.2	15.11 .18	16.5 0.3	61.41 .52	87.7 +0.5
19.2	6.05 .16	32.9 0.2	4.07 .18	40.7 +0.1	14.93 .18	16.7 +0.2	60.90 .51	87.9 0.0
29.2	5.90 .14	33.2 0.3	3.90 .16	40.7 0.0	14.76 .16	16.8 0.0	60.40 .48	87.6 -0.5
May 9.2	5.78 .11	33.6 0.4	3.75 .13	40.6 -0.2	14.62 .13	16.8 -0.1	59.94 .42	86.8 1.0
19.2	5.68 .08	34.1 0.5	3.64 .10	40.4 0.3	14.50 .10	16.7 0.2	59.53 .37	85.6 1.4
29.1	5.61 .05	34.6 0.6	3.56 .06	40.1 0.4	14.42 .06	16.4 0.3	59.20 .29	83.9 1.8
June 8.1	5.58 -.02	35.2 0.6	3.52 -.02	39.7 0.4	14.37 -.03	16.1 0.4	58.96 .21	81.9 2.1
18.1	5.58 +.02	35.9 0.7	3.52 +.02	39.2 0.5	14.37 +.01	15.7 0.4	58.80 .12	79.7 2.4
28.0	5.61 .05	36.6 0.7	3.56 .06	38.7 0.6	14.40 .05	15.3 0.5	58.73 -.02	77.2 2.6
July 8.0	5.68 .09	37.3 0.7	3.63 .10	38.1 0.6	14.47 .09	14.7 0.6	58.77 +.08	74.5 2.7
18.0	5.78 .12	38.0 0.7	3.75 .13	37.5 0.6	14.57 .12	14.2 0.6	58.89 .17	71.8 2.8
28.0	5.91 .15	38.6 0.6	3.89 .16	36.8 0.7	14.71 .16	13.5 0.6	59.11 .26	69.0 2.8
Aug. 6.9	6.07 .17	39.2 0.5	4.07 .19	36.1 0.7	14.88 .19	12.9 0.7	59.42 .34	66.2 2.7
16.9	6.26 .20	39.7 0.4	4.28 .22	35.4 0.8	15.08 .21	12.2 0.7	59.81 .42	63.5 2.6
26.9	6.47 .22	40.0 +0.2	4.52 .25	34.0 0.8	15.31 .24	11.4 0.8	60.27 .50	60.9 2.5
Sept. 5.9	6.70 .24	40.1 0.0	4.78 .27	33.7 0.8	15.56 .26	10.6 0.9	60.80 .56	58.5 2.3
15.8	6.95 .26	40.0 -0.2	5.06 .29	32.9 0.9	15.83 .29	9.7 0.9	61.40 .62	56.3 2.1
25.8	7.22 .27	39.6 0.5	5.36 .31	32.0 0.9	16.13 .30	8.8 1.0	62.05 .67	54.4 1.8
Oct. 5.8	7.50 .29	39.0 0.7	5.68 .32	31.0 0.9	16.44 .32	7.8 1.0	62.74 .71	52.8 1.5
15.7	7.79 .30	38.2 1.0	6.01 .34	30.1 0.9	16.77 .33	6.8 1.0	63.47 .74	51.5 1.1
25.7	8.09 .30	37.1 1.2	6.35 .34	29.2 0.9	17.11 .34	5.8 1.0	64.22 .75	50.6 0.7
Nov. 4.7	8.39 .30	35.9 1.4	6.69 .34	28.3 0.9	17.45 .34	4.8 1.0	64.98 .76	50.1 -0.3
14.7	8.69 .29	34.5 1.5	7.03 .33	27.5 0.8	17.79 .33	3.9 0.9	65.73 .74	50.1 +0.2
24.6	8.98 .28	32.9 1.6	7.36 .32	26.8 0.7	18.12 .32	3.0 0.8	66.45 .70	50.5 0.6
Dec. 4.6	9.25 .25	31.3 1.6	7.67 .29	26.2 0.5	18.43 .30	2.3 0.6	67.13 .65	51.3 1.0
14.6	9.49 .22	29.7 1.6	7.94 .26	25.7 0.3	18.71 .28	1.8 0.4	67.75 .58	52.6 1.5
24.6	9.69 .18	28.2 1.5	8.18 .22	25.5 -0.1	18.96 .22	1.5 0.2	68.28 .48	54.3 1.8
34.5	9.86 +.14	26.7 -1.3	8.38 +.17	25.5 0.0	19.16 +.18	1.3 -0.1	68.71 +.37	56.3 +2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	15 Argus (ι)		η Cancr.		ϵ Hydræ.		ι Ursæ Majoris.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 8 ^m 2	[°] -23 ['] 57	^h 8 ^m 25	[°] +20 ['] 50	^h 8 ^m 40	[°] +6 ['] 50	^h 8 ^m 51	[°] +48 ['] 29
(Dec. 30.6)	30.88 +.17	46.4 -3.0	52.09 +.23	29.7 -0.7	30.73 +.22	67.9 -1.6	6.39 +.22	72.9 +0.6
Jan. 9.5	31.03 .12	49.3 2.9	52.29 .18	29.2 0.5	30.93 .18	66.4 1.4	6.68 .26	73.7 1.9
19.5	31.13 .07	52.1 2.8	52.45 .13	28.8 0.3	31.08 .13	65.1 1.2	6.91 .20	74.9 1.3
29.5	31.18 +.02	54.8 2.6	52.55 .08	28.6 -0.1	31.19 .08	64.0 1.0	7.07 .13	76.3 1.5
Feb. 8.5	31.17 -.03	57.2 2.3	52.60 +.02	28.6 +0.1	31.25 +.02	63.2 0.8	7.16 +.05	77.9 1.7
18.4	31.11 .08	59.4 2.0	52.59 -.03	28.8 0.3	31.25 -.02	62.5 0.5	7.17 -.02	79.6 1.7
28.4	31.01 .12	61.3 1.7	52.54 .07	29.2 0.4	31.21 .06	62.1 0.4	7.12 .09	81.4 1.7
Mar. 10.4	30.87 .15	62.8 1.3	52.44 .11	29.6 0.4	31.13 .10	61.8 -0.2	7.00 .15	83.1 1.6
20.4	30.71 .17	63.9 1.0	52.32 .14	30.0 0.5	31.02 .12	61.7 0.0	6.83 .19	84.7 1.5
30.3	30.53 .19	64.7 0.6	52.16 .16	30.5 0.5	30.89 .14	61.8 +0.1	6.62 .22	86.0 1.3
Apr. 9.3	30.34 .19	65.1 -0.2	52.00 .17	30.9 0.4	30.74 .15	61.9 0.2	6.38 .24	87.1 0.9
19.3	30.15 .19	65.2 +0.1	51.83 .16	31.3 0.4	30.58 .15	62.2 0.3	6.13 .26	87.9 0.6
29.3	29.97 .17	64.9 0.5	51.67 .15	31.6 0.3	30.43 .14	62.5 0.4	5.88 .24	88.3 +0.3
May 9.2	29.80 .15	64.2 0.8	51.52 .14	31.9 0.2	30.29 .13	62.9 0.4	5.65 .23	88.4 -0.1
19.2	29.66 .13	63.2 1.1	51.40 .11	32.1 0.1	30.17 .11	63.4 0.5	5.43 .20	88.2 0.4
29.2	29.54 .10	62.0 1.4	51.30 .08	32.2 +0.1	30.07 .09	63.8 0.5	5.25 .17	87.6 0.7
June 8.1	29.46 .07	60.4 1.7	51.23 .05	32.1 0.0	30.00 .06	64.4 0.5	5.10 .13	86.7 1.0
18.1	29.41 -.03	58.7 1.8	51.19 -.02	32.1 -0.1	29.95 -.03	64.9 0.5	4.99 .09	85.6 1.3
28.1	29.39 .00	56.8 2.0	51.19 +.01	32.0 0.2	29.93 .00	65.4 0.5	4.93 -.04	84.1 1.5
July 8.1	29.41 +.03	54.7 2.1	51.22 .04	31.8 0.2	29.94 +.03	66.0 0.5	4.91 +.01	82.5 1.7
18.0	29.46 .07	52.6 2.1	51.28 .08	31.5 0.3	29.99 .06	66.5 0.5	4.94 .05	80.7 1.9
28.0	29.55 .10	50.4 2.1	51.37 .11	31.1 0.4	30.06 .09	66.9 0.4	5.02 .10	78.7 2.0
Aug. 7.0	29.66 .14	48.4 2.0	51.49 .14	30.7 0.5	30.16 .11	67.3 0.3	5.14 .14	76.7 2.1
17.0	29.82 .17	46.5 1.8	51.65 .17	30.2 0.6	30.28 .14	67.5 +0.2	5.30 .18	74.6 2.2
26.9	30.00 .20	44.9 1.5	51.82 .19	29.5 0.7	30.44 .17	67.6 0.0	5.51 .23	72.4 2.2
Sept. 5.9	30.21 .22	43.6 1.1	52.03 .22	28.8 0.8	30.62 .19	67.5 -0.2	5.75 .27	70.2 2.2
15.9	30.45 .25	42.6 0.7	52.27 .24	27.9 0.9	30.82 .22	67.2 0.4	6.04 .30	68.1 2.1
25.8	30.71 .27	42.1 +0.3	52.52 .27	26.9 1.1	31.05 .24	66.7 0.7	6.36 .34	66.0 2.0
Oct. 5.8	30.99 .29	42.0 -0.2	52.80 .29	25.8 1.2	31.31 .27	65.9 0.9	6.71 .37	64.0 1.9
15.8	31.29 .31	42.5 0.7	53.10 .31	24.6 1.2	31.59 .29	64.9 1.1	7.10 .40	62.1 1.8
25.8	31.61 .32	43.4 1.2	53.42 .32	23.3 1.3	31.88 .30	63.7 1.3	7.51 .43	60.4 1.6
Nov. 4.7	31.92 .32	44.8 1.6	53.75 .33	21.9 1.4	32.19 .31	62.2 1.5	7.95 .44	59.0 1.3
14.7	32.24 .31	46.6 2.0	54.08 .33	20.6 1.3	32.50 .32	60.7 1.6	8.39 .45	57.9 1.0
24.7	32.54 .30	48.9 2.4	54.41 .33	19.3 1.3	32.82 .31	59.0 1.7	8.84 .44	57.0 0.7
Dec. 4.7	32.83 .27	51.4 2.7	54.73 .31	18.1 1.2	33.12 .30	57.2 1.7	9.27 .42	56.6 -0.3
14.6	33.09 .24	54.2 2.8	55.03 .29	17.0 1.0	33.41 .27	55.5 1.7	9.68 .40	56.4 +0.1
24.6	33.31 .20	57.1 2.9	55.30 .25	16.1 0.8	33.67 .24	53.8 1.6	10.06 .35	56.7 0.5
34.6	33.48 +.15	60.0 -3.0	55.53 +.21	15.4 -0.6	33.90 +.21	52.3 -1.4	10.39 +.30	57.4 +0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	σ^2 Ursæ Majoris.		κ Cancri.		ϵ Argus.		1 Draconis (H.)	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 8 ^m 59	+67° 36'	^h 9 ^m 1	+11° 8'	^h 9 ^m 13	-58° 46'	^h 9 ^m 19	+81° 50'
(Dec. 30.6)	^s 58.95 +.52	40.8 +1.4	^s 20.34 +.25	37.0 -1.4	^s 56.85 +.32	20.3 -3.5	^s 70.61+1.30	41.3 +1.8
Jan. 9.6	59.42 .43	42.5 1.8	20.57 .90	35.7 1.2	57.13 .94	33.0 3.7	71.80 1.07	43.3 2.2
19.6	59.78 .32	44.6 2.2	20.75 .16	34.6 1.0	57.33 .16	36.8 3.9	72.74 .80	45.8 2.6
29.5	60.03 .19	46.9 2.4	20.88 .11	33.7 0.7	57.46 +.08	40.7 3.9	73.39 .50	48.5 2.8
Feb. 8.5	60.16 +.07	49.4 2.5	20.96 +.05	33.1 0.5	57.49 .00	44.5 3.7	73.74+ .19	51.4 3.0
18.5	60.17 -.05	52.0 2.5	20.98 .00	32.7 0.3	57.45 -.08	48.1 3.5	73.76- .13	54.4 3.0
28.4	60.05 .16	54.5 2.5	20.96 -.04	32.5 -0.1	57.33 .15	51.6 3.3	73.48 .43	57.4 2.9
Mar. 10.4	59.83 .96	56.9 2.3	20.90 .08	32.5 0.0	57.14 .21	54.7 3.0	72.91 .71	60.1 2.7
20.4	59.52 .35	59.0 2.0	20.81 .11	32.6 +0.2	56.90 .37	57.5 2.6	72.08 .94	62.6 2.3
30.4	59.13 .41	60.8 1.6	20.68 .13	32.8 0.3	56.61 .31	59.8 2.1	71.04 1.13	64.8 1.9
Apr. 9.3	58.69 .45	62.2 1.2	20.54 .14	33.1 0.3	56.29 .33	61.7 1.7	69.82 1.27	66.4 1.4
19.3	58.22 .47	63.1 0.7	20.39 .15	33.5 0.4	55.94 .35	63.1 1.2	68.50 1.36	67.5 0.9
29.3	57.74 .47	63.5 +0.2	20.25 .15	33.9 0.4	55.59 .36	64.0 0.6	67.11 1.40	68.1 +0.3
May 9.3	57.28 .45	63.5 -0.3	20.10 .13	34.3 0.4	55.23 .35	64.4 -0.1	65.71 1.38	68.1 -0.3
19.2	56.84 .42	62.9 0.7	19.98 .12	34.7 0.4	54.88 .34	64.3 +0.4	64.36 1.32	67.6 0.8
29.2	56.45 .37	61.9 1.2	19.87 .10	35.1 0.4	54.55 .32	63.6 0.9	63.10 1.21	66.5 1.4
June 8.2	56.12 .30	60.5 1.6	19.79 .07	35.5 0.4	54.25 .32	62.5 1.4	61.96 1.06	64.8 1.9
18.1	55.85 .23	58.7 2.0	19.73 .05	35.9 0.4	53.98 .25	60.9 1.8	60.99 .87	62.8 2.3
28.1	55.66 .15	56.6 2.3	19.70 -.02	36.2 0.3	53.75 .20	59.0 2.2	60.20 .68	60.3 2.6
July 8.1	55.55 -.07	54.1 2.5	19.69 +.01	36.5 0.3	53.58 .15	56.6 2.5	59.62 .47	57.5 3.0
18.1	55.52 +.01	51.5 2.7	19.72 .04	36.8 0.2	53.45 .10	54.0 2.7	59.26 .25	54.4 3.2
28.0	55.58 .09	48.6 2.9	19.77 .07	36.9 +0.1	53.38 -.04	51.1 2.9	59.12- .02	51.2 3.4
Aug. 7.0	55.72 .18	45.7 2.9	19.85 .10	37.0 0.0	53.38 +.03	48.2 3.0	59.21+ .21	47.8 3.5
17.0	55.94 .25	42.7 3.0	19.96 .12	36.9 -0.1	53.44 .09	45.2 2.9	59.54 .44	44.3 3.5
27.0	56.23 .33	39.8 3.0	20.10 .15	36.7 0.3	53.57 .16	42.4 2.8	60.09 .66	40.8 3.4
Sept. 5.9	56.61 .40	36.9 2.9	20.26 .18	36.3 0.5	53.77 .23	39.7 2.5	60.85 .87	37.5 3.3
15.9	57.05 .47	34.1 2.7	20.45 .21	35.8 0.7	54.03 .29	37.3 2.2	61.82 1.07	34.3 3.1
25.9	57.56 .54	31.5 2.5	20.67 .23	35.0 0.9	54.35 .35	35.4 1.7	62.98 1.25	31.3 2.9
Oct. 5.8	58.13 .59	29.1 2.3	20.92 .26	34.0 1.1	54.73 .41	33.9 1.2	64.31 1.41	28.6 2.6
15.8	58.75 .64	27.0 2.0	21.10 .28	32.9 1.3	55.16 .45	33.0 +0.6	65.79 1.55	26.2 2.2
25.8	59.42 .68	25.2 1.6	21.48 .30	31.5 1.4	55.63 .48	32.7 0.0	67.40 1.66	24.2 1.8
Nov. 4.8	60.11 .70	23.8 1.2	21.79 .31	30.0 1.6	56.13 .50	33.0 -0.7	69.10 1.73	22.7 1.3
14.7	60.83 .72	22.9 0.7	22.11 .32	28.4 1.7	56.63 .50	34.0 1.3	70.85 1.77	21.7 0.7
24.7	61.54 .71	22.4 -0.3	22.43 .32	26.7 1.7	57.13 .49	35.6 1.9	72.62 1.76	21.2 -0.2
Dec. 4.7	62.24 .68	22.4 +0.2	22.75 .31	25.1 1.7	57.61 .46	37.9 2.5	74.35 1.70	21.4 +0.4
14.7	62.90 .63	22.0 0.7	23.06 .29	23.4 1.6	58.06 .42	40.6 3.0	76.00 1.59	22.0 1.0
24.6	63.50 .57	23.0 1.2	23.33 .26	21.8 1.5	58.45 .36	43.8 3.3	77.51 1.43	23.3 1.5
34.6	64.03 +.49	25.3 +1.6	23.58 +.22	20.4 -1.3	58.78 +.29	47.3 -3.6	78.84+1.22	25.0 +2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Hydræ.		δ Ursæ Majoris		θ Ursæ Majoris.		ϵ Leonis.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 9 ^m 21	[°] —8 ['] 8	^h 9 ^m 23	[°] +70 ['] 20	^h 9 ^m 24	[°] +52 ['] 12	^h 9 ^m 39	[°] +24 ['] 16
(Dec. 30.6)	46.46 +.95	42.4 —2.4	60.85 +.09	47.9 +1.3	56.45 +.38	49.4 +0.5	7.92 +.29	63.4 —1.0
Jan. 9.6	46.69 .31	44.7 2.3	61.42 .59	49.4 1.8	56.81 .39	50.2 1.0	8.19 .25	62.6 0.6
19.6	46.68 .16	46.9 2.1	61.88 .40	51.4 2.2	57.10 .25	51.3 1.3	8.42 .20	62.2 —0.3
29.5	47.02 .11	49.0 1.9	62.21 .37	53.8 2.4	57.31 .18	52.8 1.6	8.60 .15	62.0 0.0
Feb. 8.5	47.11 .07	50.8 1.7	62.41 +.13	56.3 2.6	57.45 .10	54.6 1.8	8.72 .10	62.1 +0.2
18.5	47.15 +.02	52.4 1.5	62.47 —.01	59.0 2.7	57.51 +.09	56.5 2.0	8.80 +.04	62.5 0.5
28.4	47.14 —.03	53.7 1.2	62.39 .14	61.7 2.6	57.49 —.05	58.5 2.0	8.81 —.01	63.1 0.6
Mar. 10.4	47.09 .07	54.8 1.0	62.19 .36	64.3 2.5	57.41 .12	60.5 1.9	8.78 .05	63.8 0.8
20.4	47.01 .10	55.6 0.7	61.88 .36	66.7 2.3	57.26 .17	62.4 1.8	8.71 .09	64.6 0.8
30.4	46.90 .12	56.2 0.5	61.48 .44	68.7 1.9	57.06 .22	64.1 1.6	8.60 .12	65.5 0.8
Apr. 9.3	46.77 .14	56.6 —0.2	61.01 .50	70.4 1.5	56.82 .25	65.5 1.3	8.47 .14	66.3 0.8
19.3	46.63 .14	56.7 0.0	60.49 .53	71.6 1.0	56.56 .26	66.6 1.0	8.33 .15	67.1 0.8
29.3	46.48 .14	56.6 +0.2	59.95 .55	72.4 +0.5	56.29 .27	67.4 0.6	8.17 .15	67.8 0.6
May 9.3	46.34 .14	56.3 0.4	59.40 .54	72.6 0.0	56.03 .26	67.8 +0.2	8.02 .15	68.4 0.5
19.2	46.21 .12	55.8 0.6	58.88 .51	72.3 —0.5	55.78 .24	67.8 —0.2	7.88 .14	68.8 0.4
29.2	46.10 .11	55.1 0.7	58.40 .46	71.5 1.0	55.55 .21	67.5 0.6	7.75 .12	69.1 0.2
June 8.2	46.00 .09	54.3 0.9	57.97 .40	70.2 1.5	55.35 .18	66.8 0.9	7.64 .10	69.3 +0.1
18.1	45.92 .06	53.3 1.0	57.61 .32	68.6 1.9	55.19 .14	65.7 1.2	7.55 .08	69.3 —0.1
28.1	45.87 .04	52.3 1.1	57.32 .24	66.5 2.2	55.07 .10	64.3 1.5	7.48 .05	69.1 0.2
July 8.1	45.84 —.02	51.2 1.1	57.13 .16	64.1 2.5	55.00 —.06	62.6 1.8	7.45 —.02	68.8 0.4
18.1	45.84 +.01	50.0 1.2	57.01 —.07	61.4 2.8	54.97 .00	60.7 2.0	7.44 .00	68.3 0.5
28.0	45.86 .04	48.8 1.1	57.00 +.03	58.5 3.0	54.99 +.04	58.5 2.2	7.46 +.03	67.7 0.7
Aug. 7.0	45.92 .07	47.7 1.1	57.07 .12	55.5 3.1	55.06 .09	56.2 2.4	7.50 .06	67.0 0.8
17.0	46.00 .09	46.7 0.9	57.23 .21	52.3 3.2	55.17 .14	53.8 2.5	7.58 .09	66.0 1.0
27.0	46.10 .12	45.8 0.8	57.49 .30	49.2 3.2	55.33 .18	51.3 2.5	7.69 .12	65.0 1.1
Sept. 5.9	46.24 .15	45.2 0.5	57.83 .39	46.0 3.1	55.54 .23	48.8 2.5	7.83 .15	63.8 1.3
15.9	46.41 .18	44.8 +0.2	58.26 .47	43.0 3.0	55.79 .27	46.2 2.5	8.00 .19	62.4 1.4
25.9	46.61 .21	44.7 —0.1	58.77 .55	40.1 2.8	56.09 .32	43.8 2.5	8.20 .22	60.9 1.6
Oct. 5.8	46.84 .24	44.9 0.4	59.35 .62	37.4 2.6	56.43 .36	41.3 2.3	8.43 .25	59.3 1.7
15.8	47.09 .27	45.5 0.8	60.00 .68	35.0 2.3	56.81 .40	39.1 2.2	8.70 .28	57.6 1.8
25.8	47.37 .29	46.5 1.1	60.71 .73	32.9 1.9	57.22 .43	37.0 2.0	8.99 .30	55.8 1.8
Nov. 4.8	47.67 .31	47.8 1.5	61.46 .77	31.2 1.5	57.66 .45	35.2 1.7	9.30 .32	54.0 1.8
14.7	47.98 .32	49.4 1.7	62.25 .79	29.9 1.0	58.13 .47	33.6 1.4	9.64 .34	52.2 1.8
24.7	48.30 .32	51.3 2.0	63.05 .80	29.2 —0.5	58.60 .47	32.5 1.0	9.98 .35	50.4 1.7
Dec. 4.7	48.62 .31	53.4 2.2	63.83 .78	28.9 0.0	59.07 .46	31.7 0.6	10.33 .34	48.8 1.5
14.7	48.92 .29	55.6 2.3	64.59 .73	29.2 +0.5	59.53 .44	31.3 —0.1	10.67 .33	47.4 1.3
24.6	49.20 .27	58.0 2.3	65.29 .66	30.0 1.1	59.96 .40	31.4 +0.3	10.99 .31	46.2 1.1
34.6	49.45 +.23	60.3 —2.3	65.91 +.56	31.3 +1.5	60.34 +.26	31.9 +0.7	11.28 +.27	45.3 —0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Leonis.		α Leonis. (Regulus.)		32 Ursæ Majoris.		γ^1 Leonis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 9 ^m 46	[°] +26 ['] 33	^h 10 ^m 2	[°] +12 ['] 32	^h 10 ^m 9	[°] +65 ['] 41	^h 10 ^m 13	[°] +20 ['] 26
(Dec. 30.6)	^s 1.85 +.30	45.6 -0.9	^s 4.01 +.30	42.1 -1.5	^s 26.05 +.58	41.8 +0.7	^s 26.62 +.30	20.6 -1.3
Jan. 9.6	2.13 .26	44.9 0.5	4.29 .26	40.6 1.3	26.59 .51	42.7 1.9	26.91 .27	19.5 1.0
19.6	2.37 .21	44.6 -0.2	4.52 .21	39.4 1.1	27.06 .43	44.1 1.6	27.17 .32	18.7 0.7
29.6	2.56 .16	44.5 +0.1	4.71 .16	38.5 0.8	27.44 .33	46.0 2.0	27.37 .18	18.1 0.4
Feb. 8.5	2.70 .11	44.7 0.4	4.85 .11	37.8 0.5	27.71 .22	48.2 2.4	27.53 .13	17.9 -0.1
18.5	2.78 +.05	45.2 0.6	4.94 .06	37.4 0.3	27.87 +.11	50.7 2.5	27.64 .06	18.0 +0.2
28.5	2.80 .00	45.9 0.8	4.96 +.02	37.3 -0.1	27.92 .00	53.3 2.6	27.69 +.03	18.3 0.4
Mar. 10.5	2.78 -.05	46.8 0.9	4.97 -.03	37.3 +0.2	27.87 -.11	55.9 2.6	27.70 -.02	18.8 0.6
20.4	2.71 .09	47.7 1.0	4.92 .06	37.6 0.3	27.71 .20	58.5 2.5	27.66 .05	19.5 0.7
30.4	2.60 .19	48.7 1.0	4.85 .09	38.0 0.4	27.47 .28	60.8 2.2	27.59 .09	20.3 0.8
Apr. 9.4	2.47 .14	49.6 0.9	4.74 .12	38.4 0.5	27.16 .34	62.9 1.9	27.49 .11	21.1 0.8
19.3	2.32 .15	50.5 0.8	4.62 .13	39.0 0.6	26.79 .39	64.6 1.5	27.37 .13	21.9 0.8
29.3	2.17 .16	51.3 0.7	4.49 .13	39.5 0.6	26.39 .41	65.9 1.1	27.23 .14	22.7 0.8
May 9.3	2.01 .15	51.9 0.6	4.36 .13	40.1 0.6	25.97 .42	66.7 0.6	27.10 .14	23.5 0.7
19.3	1.87 .14	52.4 0.4	4.23 .13	40.7 0.5	25.55 .42	67.1 +0.1	26.96 .13	24.1 0.6
29.2	1.73 .13	52.7 +0.2	4.11 .11	41.2 0.5	25.14 .40	67.0 -0.4	26.83 .12	24.6 0.4
June 8.2	1.61 .11	52.8 0.0	4.00 .10	41.6 0.4	24.76 .36	66.3 0.9	26.72 .11	25.0 0.3
18.2	1.52 .08	52.8 -0.1	3.91 .08	42.0 0.4	24.42 .32	65.3 1.3	26.62 .09	25.2 +0.2
28.2	1.45 .06	52.6 0.3	3.84 .06	42.4 0.3	24.13 .28	63.8 1.7	26.54 .07	25.3 0.0
July 8.1	1.40 -.03	52.2 0.5	3.79 .04	42.6 0.2	23.90 .21	61.8 2.1	26.48 .05	25.2 -0.1
18.1	1.39 .00	51.6 0.7	3.77 -.01	42.7 +0.1	23.72 .14	59.6 2.4	26.44 -.03	25.0 0.3
28.1	1.40 +.03	50.9 0.8	3.76 +.01	42.7 0.0	23.62 .07	57.0 2.7	26.43 .00	24.6 0.5
Aug. 7.0	1.44 .06	50.0 1.0	3.79 .04	42.6 -0.2	23.58 -.01	54.2 2.9	26.44 +.03	24.0 0.6
17.0	1.51 .09	48.9 1.1	3.84 .06	42.4 0.3	23.61 +.07	51.2 3.1	26.48 .05	23.3 0.8
27.0	1.61 .12	47.7 1.3	3.91 .09	42.0 0.5	23.71 .14	48.0 3.2	26.55 .06	22.4 1.0
Sept. 6.0	1.74 .15	46.3 1.4	4.02 .12	41.4 0.7	23.88 .21	44.8 3.2	26.65 .12	21.3 1.2
15.9	1.91 .18	44.8 1.6	4.15 .15	40.6 0.9	24.13 .28	41.6 3.2	26.78 .15	20.1 1.3
25.9	2.10 .21	43.2 1.7	4.32 .19	39.7 1.1	24.45 .36	38.5 3.1	26.94 .18	18.7 1.5
Oct. 5.9	2.33 .25	41.5 1.8	4.52 .22	38.5 1.3	24.84 .43	35.4 3.0	27.14 .22	17.1 1.7
15.9	2.60 .28	39.7 1.9	4.76 .25	37.1 1.5	25.30 .49	32.5 2.8	27.38 .25	15.3 1.8
25.8	2.89 .31	37.8 1.9	5.02 .28	35.5 1.7	25.82 .55	29.8 2.5	27.64 .28	13.5 1.9
Nov. 4.8	3.21 .33	35.9 1.9	5.31 .30	33.8 1.8	26.39 .60	27.5 2.1	27.93 .31	11.5 2.0
14.8	3.54 .34	34.0 1.8	5.62 .32	31.9 1.9	27.01 .63	25.6 1.7	28.25 .32	9.6 2.0
24.7	3.89 .35	32.3 1.7	5.94 .33	30.0 1.9	27.66 .66	24.1 1.2	28.58 .34	7.6 1.9
Dec. 4.7	4.24 .35	30.7 1.5	6.27 .33	28.1 1.9	28.32 .68	23.1 0.8	28.93 .34	5.7 1.8
14.7	4.59 .34	29.3 1.3	6.60 .32	26.3 1.8	28.97 .64	22.6 -0.2	29.27 .34	4.0 1.6
24.7	4.92 .32	28.1 1.0	6.91 .30	24.5 1.6	29.60 .61	22.7 +0.4	29.60 .32	2.5 1.4
34.6	5.22 +.29	27.3 -0.7	7.20 +.27	23.0 -1.4	30.18 +.55	23.3 +0.9	29.91 +.22	1.2 -1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	9 Draconis (H.)		ρ Leonis.		η Argus.		ι Leonis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 10 ^m 24	+76° 18'	^h 10 ^m 26	+9° 54'	^h 10 ^m 40	-59° 3'	^h 10 ^m 43	+11° 9'
(Dec. 30.6)	^s 61.56 +.96	66.8 +0.8	^s 34.55 +.30	55.2 -1.7	^s 28.99 +.46	25.3 -2.9	^s 1.88 +.31	76.3 -1.8
Jan. 9.6	62.47 .85	67.9 1.4	34.84 .37	53.5 1.5	29.42 .40	28.4 3.2	2.18 .38	74.6 1.5
19.6	63.26 .72	69.6 1.9	35.09 .33	52.1 1.3	29.78 .33	31.8 3.5	2.44 .34	73.2 1.3
29.6	63.90 .58	71.7 2.3	35.30 .19	50.9 1.0	30.08 .26	35.4 3.7	2.66 .30	72.1 1.0
Feb. 8.5	64.38 .39	74.2 2.6	35.46 .14	50.1 0.7	30.30 .18	39.2 3.8	2.84 .16	71.2 0.7
18.5	64.67 .30	76.9 2.8	35.57 .10	49.5 0.4	30.44 .10	43.0 3.7	2.97 .11	70.7 0.4
28.5	64.77 +.01	79.9 2.9	35.64 +.04	49.1 -0.2	30.50 +.03	46.6 3.6	3.05 .06	70.4 -0.1
Mar. 10.5	64.69 -1.17	82.8 2.9	35.66 .00	49.0 0.0	30.49 -0.04	50.2 3.5	3.09 +.02	70.4 +0.1
20.4	64.44 .33	85.6 2.8	35.64 -0.04	49.1 +0.2	30.41 .11	53.6 3.2	3.08 -0.02	70.6 0.3
30.4	64.03 .48	88.3 2.5	35.58 .07	49.4 0.3	30.28 .16	56.6 2.9	3.04 .06	70.9 0.4
Apr. 9.4	63.48 .60	90.6 2.1	35.50 .00	49.8 0.5	30.09 .21	59.3 2.5	2.97 .08	71.4 0.5
19.4	62.83 .69	92.5 1.7	35.39 .11	50.3 0.5	29.86 .25	61.6 2.1	2.88 .10	72.0 0.6
29.3	62.10 .76	94.0 1.2	35.28 .19	50.9 0.6	29.59 .28	63.5 1.7	2.77 .11	72.6 0.7
May 9.3	61.33 .79	94.9 0.7	35.15 .12	51.5 0.6	29.30 .30	64.9 1.2	2.65 .12	73.3 0.7
19.3	60.53 .80	95.3 +0.2	35.03 .12	52.0 0.6	29.00 .31	65.8 0.7	2.53 .12	74.0 0.6
29.2	59.74 .77	95.2 -0.4	34.91 .12	52.6 0.6	28.68 .31	66.3 -0.2	2.41 .11	74.6 0.6
June 8.2	58.99 .73	94.5 0.9	34.80 .10	53.2 0.5	28.37 .31	66.2 +0.3	2.30 .11	75.2 0.5
18.2	58.30 .66	93.3 1.4	34.71 .09	53.7 0.5	28.07 .29	65.6 0.8	2.20 .10	75.7 0.5
28.2	57.68 .58	91.6 1.9	34.63 .07	54.1 0.4	27.78 .27	64.6 1.3	2.11 .08	76.1 0.4
July 8.1	57.15 .48	89.5 2.3	34.56 .05	54.5 0.3	27.52 .24	63.1 1.7	2.05 .06	76.4 0.3
18.1	56.72 .37	87.0 2.7	34.52 .03	54.7 0.2	27.30 .21	61.2 2.1	1.99 .05	76.6 +0.2
28.1	56.41 .25	84.1 3.0	34.50 -0.01	54.9 +0.1	27.11 .16	59.0 2.4	1.95 -0.03	76.7 0.0
Aug. 7.1	56.22 -0.13	81.0 3.2	34.50 +0.01	54.9 0.0	26.97 .11	56.5 2.6	1.93 .00	76.7 -0.1
17.0	56.15 .00	77.7 3.4	34.52 .04	54.8 -0.2	26.89 -0.05	53.7 2.8	1.94 +0.02	76.5 0.3
27.0	56.21 +0.13	74.2 3.5	34.57 .07	54.5 0.4	26.87 +0.01	50.9 2.8	1.98 .05	76.2 0.5
Sept. 6.0	56.41 .26	70.7 3.5	34.65 .10	54.1 0.6	26.92 .08	48.1 2.8	2.04 .08	75.6 0.7
16.0	56.73 .39	67.1 3.5	34.76 .13	53.4 0.8	27.04 .16	45.4 2.6	2.14 .11	74.8 0.9
25.9	57.18 .52	63.6 3.4	34.91 .16	52.5 1.0	27.23 .23	42.9 2.3	2.27 .15	73.9 1.1
Oct. 5.9	57.76 .64	60.3 3.2	35.09 .20	51.4 1.2	27.50 .30	40.8 1.9	2.43 .18	72.7 1.3
15.9	58.46 .75	57.2 3.0	35.30 .23	50.1 1.4	27.84 .37	39.0 1.5	2.63 .22	71.2 1.5
25.8	59.26 .86	54.4 2.7	35.55 .26	48.5 1.6	28.24 .43	37.8 0.9	2.87 .25	69.6 1.7
Nov. 4.8	60.16 .94	51.9 2.3	35.82 .29	46.8 1.8	28.69 .47	37.1 +0.4	3.13 .28	67.8 1.9
14.8	61.14 1.01	49.9 1.8	36.12 .31	44.9 1.9	29.19 .51	37.1 -0.3	3.43 .31	65.9 2.0
24.7	62.18 1.05	48.4 1.3	36.44 .32	43.0 2.0	29.71 .53	37.7 0.9	3.74 .32	63.9 2.0
Dec. 4.7	63.25 1.07	47.4 0.7	36.77 .33	41.0 2.0	30.24 .53	38.9 1.5	4.07 .33	61.8 2.0
14.7	64.31 1.05	47.0 -0.1	37.10 .33	39.0 1.9	30.77 .51	40.7 2.1	4.40 .33	59.8 2.0
24.7	65.34 1.00	47.2 +0.5	37.42 .31	37.1 1.8	31.27 .48	43.1 2.6	4.73 .32	57.9 1.9
34.6	66.30 +0.22	48.0 +1.1	37.72 +0.29	35.3 -1.6	31.73 +0.43	45.9 -3.0	5.04 +0.29	56.1 -1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Majoris.		δ Leonis.		δ Crateris.		τ Leonis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h ^m 10 56	+62° 22'	^h ^m 11 7	+21° 9'	^h ^m 11 13	-14° 8'	^h ^m 11 21	+3° 30'
(Dec. 30.7)	^s 24.84 +.56	" 0.0	^s 48.37 +.33	" -1.6	^s 25.11 +.39	" -2.4	^s 50.56 +.39	" -2.0
Jan. 9.6	25.39 .51	71.4 +0.6	48.69 .31	74.9 1.9	25.42 .99	11.7 2.4	50.87 .30	29.4 1.9
	19.6 25.87 .45	72.2 1.1	48.98 .27	73.9 0.9	25.70 .36	14.1 2.4	51.16 .37	27.6 1.7
	29.6 26.20 .38	73.6 1.6	49.24 .23	73.1 0.5	25.94 .29	16.5 2.3	51.40 .23	26.0 1.5
Feb. 8.6	26.62 .29	75.4 2.0	49.44 .18	72.8 -0.2	26.14 .18	18.7 2.2	51.61 .19	24.7 1.2
	18.5 26.86 .19	77.5 2.3	49.60 .14	72.8 +0.2	26.29 .13	20.7 1.9	51.78 .14	23.6 0.9
	28.5 27.01 +.10	80.0 2.5	49.72 .09	73.1 0.4	26.40 .09	22.5 1.7	51.90 .10	22.8 0.7
Mar. 10.5	27.06 .00	82.6 2.6	49.78 +.04	73.7 0.7	26.46 .04	24.1 1.5	51.97 .05	22.3 0.4
	20.5 27.02 -.06	85.2 2.6	49.80 .00	74.5 0.9	26.49 +.01	25.4 1.2	52.00 +.02	22.0 -0.2
	30.4 26.89 .16	87.8 2.5	49.77 -.04	75.4 1.0	26.48 -.03	26.5 1.0	52.00 -.02	22.0 +0.1
Apr. 9.4	26.69 .23	90.2 2.3	49.72 .07	76.4 1.1	26.43 .06	27.3 0.7	51.97 .05	22.2 0.2
	19.4 26.43 .26	92.4 2.0	49.64 .09	77.5 1.1	26.36 .06	27.9 0.5	51.91 .07	22.5 0.4
	29.3 26.12 .32	94.2 1.6	49.53 .11	78.5 1.0	26.28 .09	28.2 -0.2	51.83 .09	22.9 0.5
May 9.3	25.78 .35	95.6 1.9	49.42 .12	79.5 1.0	26.18 .10	28.3 0.0	51.74 .10	23.4 0.6
	19.3 25.43 .36	96.5 0.7	49.29 .12	80.4 0.8	26.07 .11	28.2 +0.2	51.64 .10	24.0 0.6
	29.3 25.07 .35	97.0 +0.3	49.17 .12	81.2 0.7	25.96 .11	27.9 0.4	51.53 .11	24.6 0.6
June 8.2	24.72 .34	97.0 -0.2	49.05 .12	81.8 0.5	25.85 .11	27.4 0.6	51.42 .10	25.3 0.6
	18.2 24.39 .32	96.5 0.7	48.93 .11	82.3 0.4	25.74 .11	26.8 0.7	51.32 .10	25.9 0.6
	28.2 24.09 .29	95.6 1.2	48.82 .10	82.5 +0.2	25.63 .10	26.0 0.9	51.22 .09	26.5 0.6
July 8.2	23.82 .25	94.2 1.6	48.73 .09	82.6 0.0	25.54 .09	25.1 1.0	51.14 .08	27.1 0.5
	18.1 23.60 .20	92.4 2.0	48.65 .07	82.5 -0.2	25.46 .07	24.0 1.1	51.06 .07	27.6 0.5
	28.1 23.42 .15	90.3 2.3	48.60 .05	82.1 0.4	25.39 .06	22.9 1.1	50.99 .06	28.0 0.4
Aug. 7.1	23.20 .10	87.8 2.6	48.56 -.03	81.6 0.6	25.34 .04	21.8 1.1	50.95 .04	28.4 0.3
	17.0 23.22 -.04	85.0 2.9	48.54 .00	80.9 0.8	25.32 -.01	20.7 1.1	50.92 -.01	28.6 +0.2
	27.0 23.21 +.02	82.0 3.1	48.55 +.03	79.9 1.1	25.32 +.01	19.6 1.0	50.92 +.01	28.7 0.0
Sept. 6.0	23.26 .09	78.8 3.2	48.59 .06	78.8 1.3	25.35 .05	18.7 0.8	50.94 .04	28.5 -0.2
	16.0 23.38 .15	75.5 3.3	48.66 .09	77.4 1.5	25.41 .08	18.0 0.6	51.00 .07	28.2 0.4
	25.9 23.57 .22	72.2 3.3	48.77 .13	75.8 1.7	25.50 .12	17.5 0.4	51.09 .11	27.7 0.7
Oct. 5.9	23.82 .29	68.9 3.3	48.91 .16	74.1 1.9	25.64 .16	17.2 +0.1	51.21 .14	26.9 0.9
	15.9 24.14 .36	65.7 3.2	49.09 .20	72.1 2.0	25.82 .20	17.3 -0.3	51.38 .18	25.8 1.2
	25.9 24.53 .42	62.6 3.0	49.31 .24	70.1 2.1	26.04 .23	17.8 0.6	51.58 .22	24.5 1.4
Nov. 4.8	24.98 .48	59.7 2.7	49.57 .27	67.9 2.2	26.29 .27	18.6 1.0	51.82 .26	23.0 1.7
	14.8 25.48 .53	57.2 2.3	49.86 .30	65.6 2.2	26.57 .30	19.8 1.3	52.09 .29	21.2 1.9
	24.8 26.03 .56	55.1 1.9	50.18 .33	63.4 2.2	26.89 .32	21.3 1.7	52.39 .31	19.2 2.0
Dec. 4.7	26.61 .58	53.4 1.4	50.52 .34	61.2 2.1	27.22 .33	23.1 1.9	52.71 .32	17.2 2.1
	14.7 27.20 .59	52.2 0.8	50.86 .34	59.2 1.9	27.55 .33	25.2 2.2	53.04 .33	15.0 2.1
	24.7 27.78 .57	51.5 -0.4	51.21 .34	57.4 1.7	27.88 .33	27.4 2.3	53.36 .32	12.9 2.1
	34.7 28.34 +.54	51.4 +0.2	51.54 +.32	55.9 -1.4	28.20 +.31	29.8 -2.4	53.68 +.31	10.8 -2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	λ Draconis.		ν Leonis.		β Leonis.		γ Ursa Majoris.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 11 ^m 24	+69° 56'	^h 11 ^m 30	-0° 10'	^h 11 ^m 43	+15° 13'	^h 11 ^m 47	+54° 20'
(Dec. 30.7)	^s 21.72 +.74	49.9 -0.2	^s 52.83 +.32	9.4 -2.1	^s 0.76 +.33	60.2 -1.8	^s 35.55 +.48	58.6 -0.9
Jan. 9.7	22.44 .69	50.0 +0.5	53.15 .30	11.5 2.0	1.09 .31	58.5 1.8	36.02 .46	58.0 -0.3
19.6	23.10 .63	50.8 1.1	53.44 .27	13.4 1.9	1.39 .29	57.0 1.3	36.47 .42	58.0 +0.3
29.6	23.68 .54	52.2 1.6	53.69 .23	15.2 1.7	1.66 .25	55.9 1.0	36.87 .37	58.5 0.8
Feb. 8.6	24.17 .43	54.0 2.1	53.90 .19	16.7 1.4	1.89 .21	55.1 0.6	37.21 .31	59.6 1.2
18.5	24.54 .31	56.3 2.5	54.07 .15	18.0 1.1	2.08 .17	54.6 -0.3	37.49 .24	61.1 1.7
28.5	24.79 .19	58.9 2.7	54.20 .10	19.0 0.9	2.22 .12	54.5 0.0	37.70 .17	63.0 2.1
Mar. 10.5	24.91 +.06	61.7 2.9	54.28 .06	19.8 0.6	2.32 .08	54.7 +0.3	37.83 .10	65.3 2.3
20.5	24.91 -.07	64.6 2.9	54.33 +.03	20.3 0.4	2.37 +.03	55.2 0.6	37.89 +.02	67.7 2.5
30.4	24.79 .18	67.5 2.8	54.33 -.01	20.5 -0.1	2.38 .00	55.9 0.7	37.88 -.04	70.3 2.5
Apr. 9.4	24.56 .28	70.2 2.6	54.31 .04	20.6 0.0	2.36 -.03	56.7 0.9	37.81 .10	72.8 2.5
19.4	24.24 .26	72.7 2.3	54.26 .06	20.4 +0.2	2.31 .06	57.6 1.0	37.68 .15	75.2 2.3
29.4	23.84 .43	74.8 1.9	54.19 .08	20.1 0.3	2.24 .08	58.6 1.0	37.50 .19	77.3 2.0
May 9.3	23.39 .48	76.5 1.5	54.10 .09	19.8 0.4	2.15 .10	59.5 1.0	37.29 .22	79.2 1.7
19.3	22.90 .51	77.8 1.0	54.00 .10	19.3 0.5	2.05 .11	60.5 0.9	37.06 .24	80.8 1.4
29.3	22.38 .52	78.5 +0.5	53.90 .10	18.7 0.6	1.94 .11	61.3 0.8	36.81 .26	82.0 0.9
June 8.3	21.87 .51	78.7 -0.1	53.80 .10	18.1 0.6	1.83 .11	62.1 0.7	36.55 .28	82.7 +0.5
18.2	21.36 .50	78.4 0.6	53.70 .10	17.5 0.7	1.72 .11	62.8 0.6	36.29 .25	83.0 0.0
28.2	20.88 .47	77.6 1.1	53.60 .10	16.8 0.7	1.61 .11	63.3 0.4	36.04 .24	82.8 -0.4
July 8.2	20.44 .42	76.3 1.6	53.51 .09	16.1 0.6	1.51 .10	63.6 0.3	35.80 .23	82.2 0.8
18.1	20.04 .37	74.5 2.0	53.43 .08	15.5 0.6	1.42 .09	63.8 +0.1	35.59 .20	81.2 1.3
28.1	19.70 .31	72.3 2.4	53.36 .06	15.0 0.5	1.33 .07	63.8 -0.1	35.40 .18	79.7 1.7
Aug. 7.1	19.43 .24	69.7 2.7	53.30 .04	14.5 0.5	1.27 .06	63.6 0.3	35.24 .14	77.8 2.0
17.1	19.23 .16	66.8 3.0	53.27 -.02	14.1 0.3	1.22 .04	63.2 0.5	35.11 .11	75.6 2.4
27.0	19.11 -.08	63.6 3.3	53.25 .00	13.8 +0.2	1.20 -.01	62.7 0.7	35.02 .06	73.1 2.7
Sept. 6.0	19.07 +.01	60.3 3.5	53.27 +.03	13.7 0.0	1.20 +.02	61.9 0.9	34.98 -.01	70.3 2.9
16.0	19.12 .10	56.7 3.6	53.31 .06	13.8 -0.2	1.23 .05	60.8 1.1	34.99 +.04	67.3 3.1
26.0	19.27 .19	53.1 3.6	53.39 .10	14.1 0.5	1.29 .08	59.6 1.4	35.06 .09	64.2 3.2
Oct. 5.9	19.51 .29	49.5 2.6	53.51 .14	14.7 0.7	1.40 .12	58.1 1.6	35.18 .15	60.9 3.3
15.9	19.84 .38	46.0 3.5	53.67 .18	15.5 1.0	1.54 .16	56.4 1.8	35.36 .21	57.6 3.3
25.9	20.26 .47	42.7 3.3	53.86 .21	16.6 1.3	1.72 .20	54.5 2.0	35.60 .27	54.3 3.3
Nov. 4.8	20.78 .56	39.5 3.0	54.10 .25	18.0 1.5	1.95 .24	52.5 2.1	35.90 .33	51.1 3.1
14.8	21.37 .63	36.7 2.6	54.36 .28	19.7 1.7	2.21 .28	50.3 2.2	36.26 .28	48.1 2.9
24.8	22.03 .69	34.3 2.2	54.66 .31	21.5 1.9	2.50 .30	48.1 2.3	36.67 .43	45.3 2.6
Dec. 4.8	22.75 .73	32.4 1.7	54.97 .32	23.5 2.1	2.82 .32	45.8 2.2	37.11 .46	42.0 2.2
14.7	23.50 .76	31.0 1.1	55.30 .33	25.7 2.2	3.15 .33	43.6 2.1	37.50 .48	41.0 1.7
24.7	24.25 .75	30.2 -0.5	55.63 .33	27.8 2.2	3.49 .33	41.5 2.0	38.07 .48	39.5 1.2
34.7	24.99 +.72	30.0 +0.1	55.95 +.31	30.0 -2.1	3.82 +.32	39.7 -1.7	38.55 +.47	38.6 -0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Virginis.		4 Draconis (H.)		γ Corvi.		β Chamæleontis.		
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	
	^h 11 ^m 59	[°] +9 ['] 23	^h 12 ^m 6	[°] +78 ['] 15	^h 12 ^m 9	[°] -16 ['] 52	^h 12 ^m 11	[°] -78 ['] 38	
(Dec. 30.7)	^s 10.12 +.33	["] 26.5 -2.0	^s 38.38+1.18	["] 72.1 -0.4	^s 42.54 +.34	["] 54.5 -2.2	^s 25.07+1.94	["] 51.6 -1.5	
Jan. 9.7	10.45 .39	24.6 1.8	39.55 1.15	71.9 +0.2	42.87 .33	56.8 2.3	26.29 1.18	53.4 2.1	
19.7	10.75 .36	22.9 1.6	40.66 1.08	72.4 0.8	43.19 .30	59.2 2.3	27.42 1.09	55.7 2.6	
29.6	11.03 .36	21.5 1.3	41.69 .97	73.6 1.4	43.47 .27	61.5 2.3	28.43 .95	58.5 3.0	
Feb. 8.6	11.27 .29	20.4 1.0	42.58 .82	75.3 2.0	43.72 .23	63.7 2.2	29.31 .81	61.6 3.3	
	18.6	11.47 .18	19.6 0.6	43.32 .65	77.5 2.4	43.93 .19	65.8 2.0	30.04 .65	65.1 3.6
	28.5	11.62 .13	19.1 -0.3	43.87 .46	80.1 2.8	44.10 .15	67.7 1.8	30.60 .48	68.7 3.7
Mar. 10.5	11.74 .09	18.9 0.0	44.22 .25	83.0 3.0	44.23 .11	69.4 1.6	30.99 .31	72.5 3.8	
20.5	11.81 .05	19.0 +0.2	44.37+ .05	86.0 3.1	44.31 .07	70.9 1.4	31.21+ .14	76.4 3.8	
30.5	11.84 +.02	19.4 0.4	44.31- .16	89.1 3.1	44.36 +.03	72.1 1.1	31.26- .03	80.2 3.7	
Apr. 9.4	11.84 -.02	19.9 0.6	44.06 .34	92.1 2.9	44.37 .00	73.2 0.9	31.15 .19	83.8 3.6	
19.4	11.81 .04	20.6 0.7	43.63 .51	95.0 2.7	44.35 -.03	73.9 0.7	30.89 .33	87.2 3.3	
29.4	11.76 .06	21.3 0.8	43.05 .65	97.5 2.3	44.31 .05	74.5 0.5	30.49 .47	90.4 3.0	
May 9.4	11.68 .08	22.1 0.8	42.34 .77	99.6 1.9	44.25 .07	74.8 -0.3	29.96 .59	93.2 2.6	
19.3	11.60 .09	23.0 0.8	41.52 .86	101.3 1.4	44.18 .08	74.9 0.0	29.31 .70	95.7 2.2	
	29.3	11.50 .10	23.8 0.8	40.63 .91	102.5 0.9	44.08 .09	74.9 +0.2	28.57 .79	97.7 1.8
June 8.3	11.40 .10	24.6 0.7	39.69 .95	103.1 +0.4	43.99 .10	74.6 0.3	27.74 .86	99.1 1.3	
18.2	11.29 .11	25.3 0.7	38.74 .95	103.2 -0.2	43.88 .11	74.2 0.5	26.86 .90	100.1 0.7	
28.2	11.19 .10	25.9 0.6	37.80 .93	102.7 0.7	43.77 .11	73.6 0.7	25.94 .93	100.5 -0.2	
July 8.2	11.08 .10	26.4 0.5	36.89 .88	101.7 1.3	43.66 .11	72.8 0.8	25.02 .92	100.4 +0.4	
	18.2	10.99 .09	26.8 0.3	36.04 .82	100.1 1.8	43.56 .10	71.9 0.9	24.12 .89	99.7 0.9
	28.1	10.90 .08	27.0 +0.2	35.26 .74	98.1 2.2	43.46 .10	70.9 1.0	23.26 .89	98.5 1.5
Aug. 7.1	10.83 .07	27.1 0.0	34.57 .64	95.7 2.6	43.37 .08	69.9 1.1	22.48 .73	96.8 1.9	
17.1	10.77 .03	27.1 -0.2	33.99 .59	92.9 3.0	43.29 .07	68.8 1.1	21.81 .61	94.7 2.3	
27.1	10.73 -.03	26.8 0.4	33.53 .39	89.7 3.3	43.24 .04	67.8 1.0	21.27 .46	92.2 2.7	
Sept. 6.0	10.72 .00	26.4 0.6	33.20 .25	86.3 3.5	43.21 -.01	66.8 0.9	20.89 .29	89.4 2.9	
16.0	10.73 +.03	25.7 0.8	33.02- .11	82.6 3.7	43.22 +.02	65.9 0.8	20.70- .10	86.4 3.0	
26.0	10.78 .07	24.8 1.0	33.00+ .05	78.9 3.8	43.26 .06	65.3 0.6	20.70+ .11	83.3 3.1	
Oct. 5.9	10.87 .11	23.7 1.3	33.13 .22	75.1 3.8	43.34 .10	64.8 +0.3	20.91 .32	80.3 2.9	
15.9	11.00 .15	22.3 1.5	33.43 .28	71.3 3.7	43.47 .14	64.6 0.0	21.33 .52	77.5 2.7	
	25.9	11.17 .19	20.7 1.7	33.89 .54	67.7 3.6	43.64 .19	64.8 -0.3	21.96 .72	74.9 2.4
Nov. 4.9	11.38 .23	18.9 1.9	34.51 .70	64.2 3.3	43.85 .23	65.3 0.6	22.77 .89	72.7 2.0	
14.8	11.62 .26	16.9 2.1	35.29 .85	61.1 3.0	44.11 .27	66.1 1.0	23.74 1.04	71.0 1.4	
24.8	11.90 .29	14.8 2.2	36.20 .97	58.3 2.6	44.39 .30	67.3 1.3	24.85 1.15	69.9 0.9	
Dec. 4.8	12.21 .32	12.6 2.2	37.22 1.07	56.0 2.1	44.71 .33	68.8 1.6	26.05 1.24	69.3 +0.2	
14.8	12.54 .33	10.4 2.2	38.33 1.14	54.2 1.5	45.04 .34	70.6 1.9	27.30 1.27	69.4 -0.4	
24.7	12.87 .33	8.2 2.1	39.49 1.18	53.0 0.9	45.38 .34	72.6 2.1	28.57 1.27	70.2 1.1	
34.7	13.20 +.22	6.2 -1.9	40.67+1.17	52.5 -0.2	45.72 +.22	74.8 -2.2	29.82+1.22	71.6 -1.7	

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Virginis.		α^1 Crucis.		β Corvi.		κ Draconis.	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 12 ^m 13	[°] -0 ['] 0	^h 12 ^m 19	[°] -62 ['] 26	^h 12 ^m 28	[°] -22 ['] 44	^h 12 ^m 28	[°] +70 ['] 25
(Dec. 30.7)	^s 50.31 +.33	["] 27.9 -2.1	^s 60.16 +.60	["] 11.5 -1.6	^s 9.47 +.35	["] 18.9 -2.1	^s 24.78 +.75	["] 72.9 -1.9
Jan. 9.7	50.63 .32	30.0 2.0	60.75 .57	13.4 2.2	9.82 .34	21.1 2.3	25.53 .74	72.2 -0.3
19.7	50.94 .30	32.0 1.9	61.30 .53	15.8 2.6	10.16 .32	23.4 2.4	26.26 .71	72.2 +0.3
29.7	51.23 .27	33.8 1.7	61.80 .47	18.6 3.0	10.46 .29	25.8 2.4	26.95 .65	72.9 0.9
Feb. 8.6	51.47 .23	35.4 1.4	62.24 .41	21.8 3.2	10.73 .25	28.2 2.3	27.56 .57	74.1 1.5
18.6	51.68 .19	36.7 1.2	62.60 .34	25.1 3.4	10.96 .21	30.5 2.2	28.08 .47	75.9 2.0
28.6	51.85 .15	37.7 0.9	62.90 .26	28.6 3.5	11.15 .17	32.6 2.1	28.49 .36	78.2 2.5
Mar. 10.5	51.97 .11	38.4 0.6	63.12 .18	32.1 3.5	11.30 .13	34.6 1.9	28.78 .23	80.9 2.8
20.5	52.06 .07	38.9 0.4	63.27 .11	35.6 3.5	11.41 .09	36.4 1.7	28.95 +.11	83.7 2.9
30.5	52.11 +.03	39.1 -0.2	63.34 +.04	39.0 3.3	11.48 .05	38.0 1.5	29.00 -.01	86.7 3.0
Apr. 9.5	52.13 .00	39.1 +0.1	63.35 -.03	42.3 3.1	11.51 +.02	39.4 1.2	28.93 .13	89.7 3.0
19.4	52.11 -.03	38.9 0.3	63.29 .09	45.3 2.9	11.52 -.01	40.5 1.0	28.75 .23	92.6 2.8
29.4	52.08 .05	38.6 0.4	63.17 .14	48.0 2.6	11.49 .04	41.4 0.8	28.47 .32	95.3 2.5
May 9.4	52.02 .07	38.2 0.5	63.00 .19	50.4 2.2	11.45 .06	42.0 0.5	28.11 .40	97.7 2.2
19.4	51.95 .08	37.6 0.6	62.79 .23	52.4 1.8	11.38 .08	42.4 0.3	27.69 .46	99.7 1.8
29.3	51.86 .09	37.0 0.6	62.54 .27	54.0 1.4	11.30 .09	42.6 -0.1	27.21 .50	101.2 1.3
June 8.3	51.77 .10	36.4 0.7	62.26 .30	55.1 0.9	11.20 .10	42.6 +0.2	26.69 .53	102.3 0.8
18.3	51.67 .10	35.7 0.7	61.95 .32	55.8 -0.4	11.09 .11	42.3 0.4	26.16 .54	102.8 +0.3
28.2	51.57 .10	35.0 0.6	61.62 .33	56.0 +0.1	10.98 .12	41.8 0.6	25.61 .54	102.8 -0.3
July 8.2	51.47 .10	34.4 0.6	61.29 .33	55.6 0.6	10.86 .12	41.2 0.8	25.08 .59	102.2 0.8
18.2	51.37 .10	33.8 0.6	60.95 .33	54.8 1.1	10.74 .12	40.3 0.9	24.57 .50	101.2 1.3
28.2	51.28 .09	33.3 0.5	60.64 .31	53.6 1.5	10.63 .11	39.3 1.1	24.09 .46	99.6 1.8
Aug. 7.1	51.19 .08	32.8 0.4	60.35 .27	51.9 1.9	10.52 .10	38.2 1.2	23.66 .41	97.6 2.2
17.1	51.13 .06	32.4 0.3	60.09 .23	49.8 2.2	10.43 .08	37.0 1.2	23.28 .35	95.2 2.6
27.1	51.08 .04	32.2 +0.2	59.89 .17	47.4 2.5	10.36 .06	35.7 1.2	22.97 .28	92.4 3.0
Sept. 6.1	51.05 -.01	32.1 0.0	59.75 .11	44.8 2.7	10.31 -.03	34.5 1.2	22.73 .20	89.3 3.3
16.0	51.05 +.02	32.2 -0.2	59.69 -.03	42.1 2.7	10.29 .00	33.4 1.1	22.57 .11	85.9 3.5
26.0	51.09 .05	32.5 0.4	59.70 +.06	39.4 2.7	10.32 +.05	32.3 0.9	22.50 -.02	82.3 3.7
Oct. 6.0	51.10 .09	33.1 0.7	59.80 .15	36.8 2.6	10.38 .09	31.5 0.7	22.53 +.06	78.6 3.8
16.0	51.28 .14	33.9 1.0	60.00 .24	34.3 2.3	10.49 .14	31.0 0.4	22.67 .19	74.8 3.8
25.9	51.43 .18	35.0 1.2	60.28 .33	32.2 2.0	10.65 .18	30.7 +0.1	22.91 .29	71.1 3.7
Nov. 4.9	51.63 .22	36.3 1.5	60.65 .41	30.4 1.5	10.85 .23	30.8 -0.3	23.25 .40	67.5 3.5
14.9	51.87 .26	38.0 1.7	61.10 .48	29.2 1.0	11.10 .27	31.3 0.7	23.70 .50	64.1 3.2
24.8	52.14 .29	39.8 1.9	61.61 .54	28.4 +0.4	11.39 .31	32.2 1.1	24.23 .58	61.1 2.9
Dec. 4.8	52.45 .31	41.8 2.0	62.17 .58	28.3 -0.2	11.71 .33	33.4 1.4	24.86 .65	58.4 2.4
14.8	52.77 .33	43.9 2.1	62.76 .60	28.8 0.8	12.05 .35	34.9 1.7	25.55 .71	56.2 1.9
24.8	53.10 .33	46.0 2.1	63.37 .60	29.8 1.3	12.41 .35	36.8 2.0	26.28 .74	54.6 1.4
34.7	53.43 +.32	48.1 -2.1	63.96 +.58	31.4 -1.8	12.76 +.35	38.9 -2.3	27.03 +.75	53.5 -0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	32 Camelop. (foll.)		α Can. Venaticorum.		θ Virginis.		α Virginis. (Spica.)	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	^h ^m 12 48	[°] ['] +84 2	^h ^m 12 50	[°] ['] +38 57	^h ^m 13 3	[°] ['] -4 54	^h ^m 13 18	[°] ['] -10 32
(Dec. 30.7)	^s 14.92+2.15	["] 68.0 -0.9	^s 28.47 +.39	["] 20.0 -1.9	^s 48.29 +.33	["] 18.3 -2.1	^s 56.37 +.34	["] 27.3 -2.0
Jan. 9.7	17.09 2.17	67.4 -0.9	28.85 .38	18.4 1.4	48.62 .33	20.4 2.1	56.70 .34	29.3 2.0
19.7	19.24 2.12	67.5 +0.5	29.23 .37	17.2 0.9	48.94 .32	22.4 2.0	57.03 .33	31.3 2.0
29.7	21.29 1.98	68.3 1.1	29.59 .34	16.6 -0.3	49.25 .29	24.3 1.8	57.35 .30	33.3 1.9
Feb. 8.6	23.17 1.77	69.7 1.7	29.91 .30	16.6 +0.2	49.53 .27	26.0 1.6	57.64 .28	35.1 1.8
18.6	24.80 1.49	71.7 2.2	30.19 .26	17.0 0.7	49.78 .23	27.5 1.4	57.96 .25	36.8 1.6
28.6	26.13 1.16	74.1 2.6	30.43 .21	17.9 1.2	49.99 .20	28.7 1.1	58.13 .21	38.2 1.4
Mar. 10.6	27.11 0.79	76.9 2.9	30.62 .16	19.3 1.5	50.17 .16	29.7 0.9	58.32 .17	39.5 1.2
20.5	27.70 0.40	79.9 3.1	30.75 .11	21.0 1.8	50.30 .12	30.4 0.6	58.47 .14	40.5 0.9
30.5	27.90+0.01	83.1 3.2	30.84 .06	23.0 2.1	50.40 .09	30.9 0.4	58.59 .10	41.3 0.7
Apr. 9.5	27.71-0.38	86.2 3.1	30.87 +0.02	25.1 2.2	50.47 .06	31.2 -0.2	58.68 .07	41.9 0.5
19.4	27.14 0.75	89.2 2.9	30.87 -0.03	27.3 2.2	50.51 +0.03	31.2 0.0	58.73 .04	42.3 0.3
29.4	26.22 1.08	92.0 2.6	30.82 .06	29.5 2.2	50.52 .00	31.1 +0.2	58.76 +0.01	42.4 -0.1
May 9.4	24.99 1.37	94.5 2.3	30.74 .09	31.6 2.0	50.51 -0.03	30.8 0.3	58.76 -0.01	42.5 0.0
19.4	23.50 1.61	96.5 1.8	30.63 .12	33.5 1.8	50.47 .05	30.4 0.4	58.74 .03	42.3 +0.2
29.3	21.80 1.80	98.1 1.3	30.50 .14	35.2 1.6	50.42 .06	30.0 0.5	58.69 .05	42.1 0.3
June 8.3	19.95 1.91	99.2 0.8	30.35 .16	36.6 1.3	50.34 .08	29.4 0.6	58.63 .07	41.7 0.4
18.3	17.99 1.98	99.7 +0.2	30.19 .17	37.7 0.9	50.26 .09	28.8 0.6	58.55 .09	41.3 0.5
28.3	15.98 2.01	99.6 -0.3	30.02 .17	38.4 0.6	50.17 .10	28.2 0.6	58.46 .10	40.7 0.6
July 8.2	13.98 1.99	99 0 0.9	29.85 .17	38.7 +0.2	50.06 .11	27.5 0.7	58.36 .11	40.1 0.6
18.2	12.03 1.91	97.9 1.4	29.68 .17	38.7 -0.2	49.95 .11	26.0 0.6	58.25 .11	39.5 0.7
28.2	10.18 1.79	96.2 1.9	29.51 .16	38.3 0.6	49.84 .11	26.2 0.6	58.13 .12	38.8 0.7
Aug. 7.1	8.46 1.64	94.1 2.4	29.35 .15	37.5 1.0	49.73 .10	25.6 0.6	58.01 .12	38.1 0.7
17.1	6.91 1.45	91.5 2.8	29.21 .13	36.3 1.3	49.63 .09	25.1 0.5	57.90 .11	37.4 0.7
27.1	5.57 1.22	88.6 3.1	29.09 .11	34.8 1.7	49.54 .08	24.7 0.4	57.80 .09	36.8 0.6
Sept. 6.1	4.47 0.97	85.3 3.4	28.99 .08	33.0 2.0	49.47 .06	24.3 0.3	57.72 .07	36.2 0.5
16.0	3.64 0.70	81.8 3.6	28.93 -0.04	30.8 2.2	49.43 -0.03	24.2 +0.1	57.66 .04	35.7 0.4
26.0	3.09 0.40	78.1 3.8	28.91 .00	28.4 2.6	49.42 +0.01	24.2 -0.1	57.63 -0.01	35.4 +0.2
Oct. 6.0	2.85-0.08	74.2 3.9	28.93 +0.05	25.7 2.8	49.44 .05	24.4 0.3	57.64 +0.03	35.3 0.0
16.0	2.93+0.25	70.4 3.8	29.00 .09	22.8 3.0	49.51 .09	24.9 0.6	57.70 .06	35.4 -0.2
25.9	3.33 0.58	66.6 3.7	29.11 .15	19.8 3.1	49.62 .13	25.6 0.9	57.80 .12	35.8 0.5
Nov. 4.9	4.08 0.91	63.0 3.5	29.29 .20	16.7 3.1	49.78 .18	26.6 1.1	57.94 .17	36.4 0.8
14.9	5.14 1.22	59.6 3.2	29.51 .25	13.6 3.1	49.98 .22	27.9 1.4	58.14 .21	37.3 1.1
24.8	6.51 1.51	56.5 2.9	29.78 .29	10.6 3.0	50.22 .26	29.4 1.6	58.37 .25	38.5 1.3
Dec. 4.8	8.14 1.78	53.8 2.4	30.10 .33	7.7 2.8	50.50 .29	31.1 1.8	58.65 .29	40.0 1.6
14.8	10.01 1.96	51.7 1.9	30.45 .36	5.1 2.5	50.80 .31	33.0 2.0	58.95 .31	41.7 1.8
24.8	12.05 2.10	50.1 1.3	30.82 .38	2.8 2.1	51.13 .33	35.0 2.1	59.27 .23	43.5 1.9
34.7	14.19+2.17	49.2 -0.7	31.20 +.39	0.9 -1.7	51.46 +.33	37.1 -2.1	59.60 +.34	45.4 -2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Virginis.		η Ursæ Majoris.		η Bootis.		β Centauri.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h ^m 13 28	[°] ['] +0 0	^h ^m 13 42	[°] ['] +49 53	^h ^m 13 49	[°] ['] +18 59	^h ^m 13 55	[°] ['] -59 47
(Dec. 30.8)	^s 38.58 +.33	39.2 -2.1	^s 51.25 +.42	65.4 -2.2	^s 1.68 +.33	27.7 -2.3	^s 26.76 +.57	42.7 -0.5
Jan. 9.8	38.91 .33	37.1 2.0	51.67 .43	63.4 1.7	2.01 .33	25.6 2.0	27.34 .58	43.4 1.0
	19.7	39.24 .32	52.11 .43	62.0 1.1	2.35 .33	23.7 1.7	27.92 .57	44.6 1.4
	29.7	39.55 .30	52.53 .42	61.2 -0.5	2.67 .32	22.2 1.3	28.48 .55	46.3 1.8
Feb. 8.7	39.84 .28	31.9 1.4	52.94 .39	61.1 +0.1	2.98 .30	21.1 0.9	29.02 .52	48.3 2.2
	18.7	40.10 .25	53.31 .35	61.5 0.7	3.26 .27	20.5 -0.5	29.51 .47	50.7 2.5
	28.6	40.33 .21	53.63 .30	62.5 1.3	3.51 .24	20.2 0.0	29.96 .42	53.3 2.7
Mar. 10.6	40.53 .18	28.9 0.6	53.91 .25	64.1 1.8	3.73 .20	20.4 +0.4	30.35 .37	56.1 2.9
	20.6	40.69 .14	54.13 .19	66.0 2.2	3.91 .16	21.0 0.7	30.69 .31	59.0 3.0
	30.5	40.81 .11	54.29 .13	68.4 2.5	4.05 .13	21.9 1.0	30.96 .25	62.0 3.0
Apr. 9.5	40.90 .08	28.4 +0.2	54.39 .08	70.9 2.7	4.16 .09	23.1 1.3	31.18 .18	64.9 3.0
	19.5	40.96 .05	54.44 +.02	73.7 2.7	4.23 .06	24.5 1.5	31.33 .12	67.8 2.9
	29.5	40.99 +.02	54.44 -0.3	76.4 2.7	4.27 +.03	26.0 1.6	31.42 .07	70.6 2.7
May 9.4	41.00 -0.1	29.7 0.6	54.38 .08	79.1 2.6	4.28 .00	27.6 1.6	31.46 +0.1	73.3 2.5
	19.4	40.98 .03	54.28 .12	81.6 2.4	4.26 -0.3	29.2 1.6	31.44 -0.5	75.7 2.3
	29.4	40.94 .05	54.15 .15	83.9 2.1	4.22 .06	30.7 1.5	31.36 .10	77.8 2.0
June 8.3	40.88 .07	31.8 0.8	53.98 .18	85.9 1.8	4.15 .08	32.2 1.4	31.23 .15	79.7 1.7
	18.3	40.81 .08	53.78 .21	87.5 1.4	4.07 .09	33.5 1.2	31.06 .20	81.1 1.3
	28.3	40.72 .10	53.56 .23	88.7 1.0	3.97 .11	34.6 1.0	30.84 .24	82.2 0.9
July 8.3	40.62 .11	34.0 0.7	53.32 .24	89.4 0.6	3.85 .12	35.4 0.8	30.58 .27	82.9 -0.5
	18.2	40.50 .12	53.08 .25	89.7 +0.1	3.72 .13	36.1 0.5	30.30 .30	83.1 0.0
	28.2	40.39 .12	52.83 .25	89.6 -0.4	3.58 .14	36.5 +0.3	29.99 .31	82.8 +0.5
Aug. 7.2	40.27 .12	35.7 0.4	52.58 .24	89.0 0.9	3.44 .14	36.6 0.0	29.68 .31	82.1 0.9
	17.2	40.15 .11	52.34 .23	87.9 1.3	3.31 .13	36.5 -0.3	29.37 .30	81.0 1.3
	27.1	40.05 .10	52.12 .21	86.4 1.7	3.18 .12	36.1 0.6	29.08 .27	79.5 1.7
Sept. 6.1	39.96 .08	36.4 0.0	51.92 .18	84.4 2.1	3.06 .11	35.4 0.8	28.83 .23	77.7 2.0
	16.1	39.89 .05	51.75 .15	82.1 2.5	2.97 .08	34.4 1.1	28.62 .18	75.5 2.3
	26.0	39.85 -0.2	51.63 .10	79.5 2.8	2.90 .05	33.2 1.4	28.47 .11	73.2 2.4
Oct. 6.0	39.85 +.02	35.6 0.6	51.55 -0.5	76.5 3.1	2.87 -0.1	31.6 1.7	28.39 -0.3	70.7 2.5
	16.0	39.80 .06	51.53 +0.1	73.3 3.3	2.88 +0.3	29.8 1.9	28.40 +0.5	68.3 2.4
	26.0	39.98 .11	51.57 .07	70.0 3.4	2.93 .08	27.8 2.2	28.50 .14	65.9 2.3
Nov. 4.9	40.11 .15	32.6 1.4	51.67 .14	66.5 3.5	3.03 .13	25.5 2.4	28.69 .23	63.7 2.1
	14.9	40.28 .20	51.84 .20	63.0 3.5	3.18 .18	23.0 2.5	28.96 .32	61.7 1.8
	24.9	40.50 .24	52.07 .26	59.5 3.4	3.38 .22	20.5 2.6	29.32 .40	60.2 1.4
Dec. 4.8	40.76 .27	27.6 1.9	52.36 .32	56.2 3.2	3.62 .26	17.9 2.6	29.75 .47	59.0 0.9
	14.8	41.05 .30	52.71 .37	53.2 2.9	3.90 .29	15.3 2.5	30.25 .52	58.4 +0.4
	24.8	41.36 .32	53.09 .40	50.5 2.5	4.21 .32	12.8 2.4	30.78 .55	58.3 -0.1
	34.8	41.69 +.33	53.50 +.43	48.2 -2.0	4.53 +.32	10.5 -2.2	31.35 +.58	58.6 -0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Draconis.		α Bootis. (<i>Arcturus</i> .)		θ Bootis.		ρ Bootis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 14	^m 1	^h 14	^m 10	^h 14	^m 21	^h 14	^m 26
		^s +64° 56'		^s +19° 47'		^s +52° 23'		^s +30° 53'
(Dec. 30.8)	9.43 +.55	18.0 -2.2	14.45 +.39	56.0 -2.4	8.48 +.40	43.8 -2.6	42.30 +.39	24.1 -2.6
Jan. 9.8	10.00 .58	16.0 1.6	14.78 .33	53.7 2.1	8.90 .43	41.5 2.0	42.63 .34	21.7 2.2
19.8	10.60 .00	14.7 1.0	15.11 .33	51.7 1.8	9.34 .44	39.7 1.4	42.98 .35	19.7 1.7
29.7	11.19 .59	14.1 -0.3	15.43 .39	50.1 1.4	9.78 .44	38.6 0.8	43.33 .34	18.2 1.3
Feb. 8.7	11.77 .56	14.1 +0.4	15.74 .30	48.9 1.0	10.21 .42	38.1 -0.2	43.66 .33	17.2 0.8
18.7	12.31 .51	14.8 1.0	16.04 .98	48.2 0.6	10.62 .39	38.2 +0.4	43.98 .31	16.8 -0.2
28.7	12.79 .45	16.1 1.6	16.30 .95	47.8 -0.1	10.99 .35	39.0 1.0	44.28 .28	16.8 +0.3
Mar. 10.6	13.20 .38	17.9 2.1	16.53 .92	48.0 +0.3	11.32 .30	40.3 1.6	44.53 .24	17.4 0.8
20.6	13.54 .39	20.2 2.5	16.73 .18	48.5 0.7	11.60 .25	42.1 2.1	44.76 .21	18.4 1.2
30.6	13.79 .21	22.9 2.8	16.89 .15	49.4 1.0	11.82 .19	44.4 2.4	44.94 .17	19.9 1.6
Apr. 9.5	13.95 .12	25.8 3.0	17.02 .11	50.6 1.3	11.98 .13	46.9 2.7	45.09 .13	21.6 1.9
19.5	14.02 +.03	28.9 3.1	17.11 .08	52.0 1.5	12.08 .08	49.7 2.9	45.20 .09	23.6 2.1
29.5	14.00 -0.6	32.0 3.1	17.16 .04	53.6 1.6	12.13 +.02	52.6 2.9	45.27 .05	25.8 2.2
May 9.5	13.90 .14	35.0 2.9	17.19 +.01	55.2 1.7	12.12 -0.4	55.5 2.9	45.30 +.02	28.1 2.3
19.4	13.73 .21	37.9 2.7	17.19 -0.2	56.9 1.7	12.06 .09	58.3 2.7	45.31 -0.1	30.3 2.2
29.4	13.40 .27	40.4 2.4	17.16 .04	58.5 1.6	11.95 .13	60.9 2.5	45.27 .05	32.5 2.1
June 8.4	13.19 .39	42.6 2.0	17.11 .07	60.0 1.5	11.80 .17	63.3 2.2	45.21 .07	34.5 1.9
18.4	12.84 .37	44.4 1.6	17.03 .09	61.4 1.3	11.61 .21	65.3 1.8	45.13 .10	36.3 1.7
28.3	12.45 .40	45.7 1.1	16.93 .11	62.6 1.1	11.39 .24	66.9 1.4	45.01 .11	37.8 1.4
July 8.3	12.04 .43	46.5 +0.6	16.81 .13	63.6 0.9	11.14 .26	68.0 1.0	44.87 .14	39.1 1.1
18.3	11.60 .44	46.8 0.0	16.68 .14	64.3 0.6	10.88 .28	68.8 +0.5	44.72 .16	40.0 0.7
28.2	11.16 .45	46.6 -0.5	16.54 .15	64.8 0.4	10.59 .29	69.0 0.0	44.55 .17	40.5 +0.4
Aug. 7.2	10.72 .44	45.8 1.0	16.39 .15	65.0 +0.1	10.31 .29	68.7 -0.5	44.38 .18	40.7 0.0
17.2	10.29 .42	44.6 1.5	16.24 .15	64.9 -0.2	10.02 .28	68.0 1.0	44.20 .18	40.6 -0.4
27.2	9.88 .39	42.8 2.0	16.10 .14	64.5 0.5	9.74 .27	66.8 1.4	44.02 .17	40.0 0.7
Sept. 6.1	9.51 .35	40.7 2.4	15.96 .13	63.8 0.8	9.48 .25	65.2 1.9	43.86 .16	39.1 1.1
16.1	9.19 .30	38.1 2.8	15.85 .10	62.8 1.1	9.25 .21	63.1 2.3	43.71 .14	37.8 1.5
26.1	8.93 .23	35.1 3.1	15.76 .08	61.6 1.4	9.06 .17	60.7 2.6	43.50 .11	36.2 1.8
Oct. 6.1	8.73 .16	31.9 3.4	15.70 -0.4	60.0 1.7	8.91 .12	57.9 3.0	43.50 .07	34.2 2.1
16.0	8.61 -0.6	28.4 3.6	15.68 .00	58.2 2.0	8.82 -0.6	54.7 3.3	43.45 -0.3	31.9 2.4
26.0	8.58 +.02	24.7 3.7	15.71 +.05	56.1 2.2	8.78 .00	51.4 3.5	43.45 +.02	29.4 2.7
Nov. 5.0	8.64 .11	20.9 3.8	15.79 .10	53.8 2.4	8.82 +.07	47.8 3.6	43.51 .08	26.7 2.9
14.9	8.80 .20	17.1 3.7	15.91 .15	51.3 2.6	8.93 .14	44.2 3.6	43.61 .13	23.7 3.0
24.9	9.05 .20	13.5 3.6	16.09 .20	48.6 2.7	9.11 .21	40.6 3.6	43.77 .18	20.7 3.0
Dec. 4.9	9.39 .28	10.0 3.3	16.31 .24	45.9 2.7	9.35 .27	37.1 3.4	43.98 .23	17.7 3.0
14.9	9.81 .26	6.8 3.0	16.57 .28	43.3 2.6	9.66 .33	33.8 3.2	44.24 .27	14.7 2.9
24.8	10.31 .23	4.1 2.5	16.86 .31	40.7 2.5	10.01 .38	30.8 2.8	44.53 .31	11.9 2.7
34.8	10.85 +.57	1.8 -2.0	17.18 +.22	38.2 -2.3	10.41 +.42	28.2 -2.3	44.85 +.23	9.4 -2.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	5 Ursæ Minoris.		α^* Centauri.		ϵ Bootis.		α^* Libræ.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h 14 27	^m +76° 12'	^h 14 31	^m -60° 20'	^h 14 39	^m +27° 34'	^h 14 44	^m -15° 32'
(Dec. 30.8)	^s 44.64 +.83	^s 67.0 -2.3	^s 33.03 +.55	^s 34.2 +0.1	^s 47.57 +.31	^s 21.4 -2.5	^s 18.23 +.32	^s 48.3 -1.5
Jan. 9.8	45.51 .91	64.9 1.7	33.60 .57	34.4 -0.4	47.90 .33	19.0 2.2	18.56 .33	49.8 1.5
19.8	46.45 .96	63.5 1.1	34.18 .58	35.1 0.9	48.23 .34	17.0 1.8	18.89 .34	51.4 1.6
29.7	47.42 .97	62.8 -0.4	34.75 .57	36.2 1.3	48.57 .34	15.3 1.4	19.23 .33	53.0 1.6
Feb. 8.7	48.39 .95	62.7 +0.3	35.31 .55	37.7 1.7	48.90 .33	14.2 0.9	19.55 .32	54.6 1.5
18.7	49.32 .90	63.3 0.9	35.84 .51	39.6 2.0	49.22 .31	13.6 -0.4	19.86 .30	56.1 1.4
28.7	50.18 .81	64.5 1.5	36.33 .47	41.8 2.3	49.51 .28	13.4 +0.1	20.15 .28	57.4 1.3
Mar. 10.6	50.93 .70	66.3 2.1	36.77 .49	44.2 2.5	49.78 .25	13.8 0.6	20.41 .25	58.6 1.1
20.6	51.56 .56	68.6 2.5	37.16 .37	46.8 2.7	50.01 .21	14.7 1.0	20.65 .22	59.6 0.9
30.6	52.05 .41	71.3 2.9	37.50 .31	49.5 2.8	50.20 .18	15.9 1.4	20.85 .19	60.5 0.8
Apr. 9.6	52.38 .25	74.4 3.1	37.78 .25	52.2 2.8	50.36 .14	17.5 1.7	21.03 .16	61.1 0.6
19.5	52.55 +.09	77.5 3.2	38.00 .19	55.0 2.8	50.48 .11	19.4 2.0	21.17 .13	61.6 0.4
29.5	52.56 -.07	80.7 3.2	38.16 .13	57.7 2.7	50.57 .07	21.4 2.1	21.29 .10	61.9 0.3
May 9.5	52.41 .23	83.9 3.1	38.26 .07	60.4 2.6	50.62 +.04	23.6 2.2	21.38 .07	62.1 -0.1
19.4	52.11 .37	86.9 2.9	38.29 +.01	62.9 2.4	50.64 .00	25.8 2.1	21.43 .04	62.2 0.0
29.4	51.67 .50	89.6 2.6	38.26 -.05	65.1 2.2	50.63 -.03	27.9 2.1	21.46 +.02	62.1 +0.1
June 8.4	51.12 .61	92.0 2.2	38.18 .11	67.2 1.9	50.58 .06	29.9 1.9	21.46 -.01	61.9 0.2
18.4	50.46 .70	94.0 1.7	38.04 .17	68.9 1.6	50.51 .08	31.7 1.7	21.43 .04	61.7 0.3
28.3	49.72 .78	95.5 1.2	37.85 .22	70.2 1.2	50.41 .11	33.2 1.5	21.38 .07	61.4 0.3
July 8.3	48.91 .83	96.5 0.7	37.60 .26	71.2 0.8	50.29 .13	34.5 1.2	21.30 .09	61.0 0.4
18.3	48.05 .87	97.0 +0.2	37.32 .30	71.8 -0.4	50.15 .15	35.5 0.9	21.20 .11	60.6 0.5
28.3	47.17 .89	96.9 -0.3	37.01 .33	72.0 0.0	49.99 .16	36.2 0.5	21.08 .13	60.1 0.5
Aug. 7.2	46.28 .88	96.3 0.9	36.67 .34	71.7 +0.5	49.82 .17	36.6 +0.2	20.94 .14	59.6 0.6
17.2	45.41 .86	95.2 1.4	36.33 .34	71.0 0.9	49.65 .18	36.6 -0.2	20.80 .15	59.0 0.6
27.2	44.57 .82	93.6 1.9	36.00 .32	69.8 1.3	49.48 .17	36.2 0.5	20.65 .14	58.4 0.6
Sept. 6.1	43.78 .75	91.5 2.3	35.69 .29	68.3 1.7	49.31 .16	35.5 0.9	20.51 .13	57.8 0.6
16.1	43.07 .67	89.0 2.7	35.42 .25	66.4 2.0	49.16 .14	34.4 1.3	20.39 .11	57.3 0.5
26.1	42.45 .57	86.1 3.1	35.20 .19	64.3 2.3	49.03 .11	33.0 1.6	20.29 .09	56.8 0.4
Oct. 6.1	41.95 .45	82.9 3.4	35.05 .11	61.9 2.4	48.93 .08	31.3 1.9	20.22 .05	56.4 0.3
16.0	41.57 .31	79.4 3.6	34.97 -.03	59.5 2.5	48.88 -.03	29.2 2.2	20.19 -.01	56.1 +0.2
26.0	41.33 -.16	75.7 3.8	34.99 +.06	57.1 2.4	48.87 +.02	26.9 2.5	20.20 +.04	56.0 0.0
Nov. 5.0	41.25 +.01	71.9 3.8	35.10 .16	54.7 2.3	48.91 .07	24.3 2.7	20.27 .09	56.1 -0.3
15.0	41.34 .17	68.1 3.8	35.30 .25	52.6 2.0	49.00 .12	21.5 2.8	20.38 .14	56.5 0.5
24.9	41.59 .34	64.3 3.7	35.59 .33	50.7 1.7	49.15 .17	18.6 2.9	20.55 .19	57.1 0.7
Dec. 4.9	42.01 .49	60.8 3.4	35.96 .41	49.2 1.3	49.34 .22	15.7 2.9	20.76 .23	57.9 1.0
14.9	42.58 .64	57.6 3.0	36.41 .48	48.1 0.9	49.58 .26	12.8 2.8	21.02 .27	59.0 1.2
24.8	43.28 .77	54.7 2.6	36.91 .53	47.5 +0.4	49.86 .29	10.0 2.7	21.31 .30	60.3 1.4
34.8	44.10 +.87	52.3 -2.1	37.46 +.56	47.4 -0.1	50.17 +.32	7.4 -2.4	21.62 +.32	61.7 -1.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Ursæ Minoris.		β Bootis.		β Libræ.		μ^1 Bootis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 14 50	^m +74° 37'	^h 14 57	^m +40° 51'	^h 15 10	^m -8° 56'	^h 15 19	^m +37° 47'
(Dec. 30.8)	^s 60.87 +.70	["] 69.2 -2.6	^s 27.57 +.33	["] 21.5 -2.8	^s 36.56 +.30	["] 37.3 -1.5	^s 59.38 +.30	["] 28.4 -2.9
Jan. 9.8	61.62 .79	66.8 2.0	27.91 .35	18.9 2.4	36.87 .31	38.9 1.6	59.70 .33	25.7 2.5
19.8	62.45 .85	65.1 1.4	28.27 .37	16.8 1.9	37.19 .32	40.5 1.6	60.04 .35	23.4 2.1
29.8	63.32 .88	64.0 0.8	28.65 .37	15.2 1.4	37.51 .32	42.0 1.5	60.39 .36	21.6 1.6
Feb. 8.7	64.20 .88	63.6 -0.1	29.02 .36	14.1 0.8	37.83 .32	43.5 1.4	60.75 .36	20.3 1.0
18.7	65.06 .84	63.9 +0.6	29.37 .35	13.6 -0.2	38.14 .30	44.7 1.2	61.10 .34	19.6 -0.4
28.7	65.87 .78	64.8 1.2	29.71 .32	13.7 +0.4	38.43 .28	45.8 1.0	61.43 .32	19.5 +0.2
Mar. 10.7	66.60 .69	66.3 1.8	30.02 .29	14.4 1.0	38.70 .26	46.7 0.8	61.74 .30	20.0 0.7
20.6	67.23 .57	68.3 2.3	30.39 .25	15.7 1.5	38.95 .23	47.4 0.6	62.02 .28	21.0 1.2
30.6	67.74 .45	70.9 2.7	30.52 .21	17.4 1.9	39.17 .21	47.8 0.3	62.27 .23	22.5 1.7
Apr. 9.6	68.12 .31	73.8 3.0	30.71 .17	19.5 2.2	39.36 .18	48.0 -0.1	62.48 .19	24.4 2.1
19.5	68.35 .17	76.9 3.2	30.86 .12	21.9 2.5	39.53 .15	48.0 +0.1	62.64 .15	26.6 2.4
29.5	68.45 +.03	80.2 3.3	30.96 .06	24.5 2.6	39.66 .12	47.9 0.2	62.77 .11	29.1 2.6
May 9.5	68.40 -1.2	83.4 3.2	31.02 +.04	27.2 2.7	39.77 .10	47.6 0.3	62.86 .07	31.8 2.7
19.5	68.21 .25	86.5 3.0	31.03 .00	29.9 2.7	39.85 .07	47.2 0.4	62.91 +.03	34.5 2.7
29.4	67.90 .27	89.5 2.8	31.01 -0.4	32.5 2.5	39.90 .04	46.8 0.5	62.92 -0.1	37.1 2.6
June 8.4	67.47 .48	92.1 2.4	30.95 .06	35.0 2.3	39.92 +.01	46.3 0.5	62.89 .05	39.6 2.4
18.4	66.94 .58	94.3 2.0	30.85 .11	37.2 2.1	39.91 -0.02	45.7 0.6	62.82 .09	41.9 2.2
28.4	66.32 .66	96.1 1.6	30.72 .14	39.1 1.8	39.87 .05	45.1 0.6	62.71 .12	44.0 1.9
July 8.3	65.62 .72	97.4 1.1	30.56 .17	40.6 1.4	39.81 .06	44.5 0.6	62.58 .15	45.8 1.6
18.3	64.87 .77	98.3 +0.6	30.38 .20	41.8 1.0	39.72 .10	44.0 0.6	62.42 .18	47.2 1.2
28.3	64.09 .80	98.6 0.0	30.17 .21	42.6 0.6	39.60 .12	43.4 0.5	62.23 .20	48.2 0.8
Aug. 7.2	63.28 .81	98.4 -0.5	29.95 .23	43.0 +0.2	39.47 .14	42.9 0.5	62.02 .21	48.8 +0.4
17.2	62.47 .80	97.6 1.0	29.72 .23	42.9 -0.3	39.33 .15	42.4 0.5	61.80 .22	49.0 0.0
27.2	61.68 .77	96.4 1.5	29.49 .22	42.4 0.7	39.18 .15	41.9 0.4	61.58 .22	48.8 -0.4
Sept. 6.2	60.93 .73	94.6 2.0	29.27 .22	41.4 1.2	39.04 .14	41.5 0.4	61.36 .22	48.2 0.9
16.1	60.23 .66	92.4 2.4	29.06 .19	40.1 1.6	38.90 .13	41.2 0.3	61.15 .20	47.1 1.3
26.1	59.61 .58	89.8 2.8	28.88 .16	38.3 2.0	38.78 .11	41.0 +0.1	60.96 .18	45.6 1.7
Oct. 6.1	59.08 .48	86.8 3.2	28.74 .13	36.1 2.3	38.69 .07	41.0 0.0	60.80 .14	43.7 2.1
16.1	58.66 .36	83.5 3.4	28.63 .08	33.6 2.7	38.63 -0.04	41.1 -0.2	60.67 .10	41.5 2.4
26.0	58.37 .23	79.9 3.7	28.58 -0.03	30.8 2.9	38.62 +.01	41.3 0.4	60.60 -0.05	38.9 2.7
Nov. 5.0	58.21 -0.06	76.2 3.8	28.58 +0.03	27.7 3.2	38.65 .06	41.8 0.6	60.58 .00	36.0 3.0
15.0	58.21 +0.07	72.4 3.8	28.64 .09	24.5 3.3	38.74 .11	42.5 0.8	60.61 +0.06	32.9 3.2
24.9	58.35 .22	68.6 3.7	28.76 .15	21.1 3.4	38.88 .16	43.4 1.0	60.70 .12	29.7 3.3
Dec. 4.9	58.65 .37	65.0 3.5	28.94 .21	17.8 3.3	39.06 .20	44.5 1.2	60.85 .18	26.4 3.3
14.9	59.10 .51	61.6 3.3	29.17 .26	14.5 3.2	39.28 .25	45.8 1.4	61.06 .23	23.2 3.2
24.9	59.68 .64	58.5 2.9	29.45 .30	11.4 3.0	39.55 .28	47.3 1.5	61.31 .27	20.1 3.0
34.8	60.36 +.74	55.9 -2.4	29.77 +.34	8.6 -2.6	39.84 +.30	48.8 -1.6	61.60 +.31	17.2 -2.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Ursæ Minoris.		α Coronæ Borealis.		α Serpentis.		ϵ Serpentis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 15 20	[°] +72 14	^h 15 29	[°] +27 6	^h 15 38	[°] +6 47	^h 15 44	[°] +4 49
(Dec. 30.9)	^s 52.55 +.56	["] 67.8 -2.9	^s 38.84 +.38	["] 45.0 -2.7	^s 24.49 +.37	["] 56.8 -2.1	^s 53.14 +.37	["] 67.3 -2.9
Jan. 9.8	53.16 .85	65.2 2.4	39.13 .31	43.3 2.4	24.77 .29	54.8 2.0	53.42 .29	65.3 1.9
19.8	53.84 .79	63.1 1.8	39.44 .32	41.0 2.1	25.07 .31	52.9 1.8	53.72 .31	63.5 1.8
29.8	54.58 .76	61.6 1.3	39.77 .33	39.1 1.7	25.38 .31	51.2 1.6	54.03 .31	61.8 1.6
Feb. 8.8	55.35 .77	60.7 -0.5	40.10 .33	37.7 1.2	25.69 .31	49.7 1.3	54.35 .31	60.4 1.3
18.7	56.12 .76	60.5 +0.2	40.43 .32	36.8 0.7	26.00 .30	48.6 1.0	54.64 .30	59.3 1.0
28.7	56.86 .72	61.1 0.9	40.74 .30	36.4 -0.2	26.29 .29	47.8 0.6	54.94 .29	58.4 0.6
Mar. 10.7	57.55 .65	62.2 1.5	41.03 .28	36.5 +0.3	26.57 .27	47.7 -0.2	55.22 .27	56.0 -0.2
20.7	58.16 .57	64.0 2.0	41.29 .25	37.1 0.8	26.83 .25	47.4 +0.1	55.48 .25	57.9 +0.1
30.6	58.69 .47	66.3 2.5	41.53 .22	38.2 1.3	27.06 .22	47.7 0.4	55.72 .22	58.1 0.4
Apr. 9.6	59.11 .36	68.9 2.9	41.74 .19	39.7 1.6	27.27 .20	48.3 0.7	55.93 .20	58.6 0.7
19.6	59.41 .24	71.9 3.1	41.91 .16	41.5 1.9	27.45 .17	49.2 1.0	56.12 .17	59.4 0.9
29.5	59.59 +.12	75.1 3.3	42.05 .12	43.6 2.1	27.60 .14	50.3 1.2	56.28 .15	60.4 1.1
May 9.5	59.65 .00	78.4 3.3	42.15 .09	45.8 2.3	27.73 .11	51.5 1.3	56.41 .12	61.6 1.2
19.5	59.59 -.12	81.7 3.2	42.22 .05	48.1 2.3	27.82 .08	52.9 1.4	56.51 .09	62.9 1.3
29.5	59.41 .23	84.8 3.0	42.26 +.02	50.4 2.3	27.88 .05	54.3 1.4	56.58 .06	64.2 1.2
June 8.4	59.13 .34	87.6 2.7	42.26 -.02	52.7 2.2	27.92 +.02	55.7 1.4	56.62 +.02	65.5 1.2
18.4	58.74 .43	90.2 2.4	42.23 .05	54.8 2.0	27.92 -.01	57.1 1.3	56.63 -.02	66.8 1.3
28.4	58.26 .51	92.4 2.0	42.16 .08	56.7 1.8	27.89 .04	58.4 1.2	56.61 .04	68.0 1.2
July 8.4	57.71 .59	94.2 1.5	42.06 .11	58.3 1.5	27.83 .07	59.5 1.1	56.56 .07	69.2 1.1
18.3	57.10 .64	95.5 1.0	41.94 .14	59.7 1.2	27.75 .10	60.5 1.0	56.48 .10	70.2 0.9
28.3	56.44 .68	96.3 +0.5	41.79 .16	60.8 0.9	27.63 .12	61.4 0.8	56.37 .12	71.0 0.8
Aug. 7.3	55.74 .71	96.5 0.0	41.62 .18	61.5 0.6	27.50 .14	62.1 0.6	56.24 .14	71.7 0.6
17.2	55.03 .71	96.3 -0.5	41.44 .19	61.9 +0.2	27.35 .15	62.6 0.4	56.09 .15	72.3 0.4
27.2	54.32 .71	95.5 1.0	41.25 .19	61.9 -0.2	27.20 .16	62.9 +0.2	55.93 .16	72.6 0.3
Sept. 6.2	53.62 .68	94.2 1.5	41.06 .19	61.6 0.5	27.04 .16	63.0 0.0	55.77 .16	72.8 +0.1
16.2	52.96 .64	92.4 2.0	40.88 .18	60.9 0.9	26.88 .15	62.9 -0.2	55.62 .15	72.7 -0.2
26.1	52.36 .57	90.2 2.5	40.71 .15	59.8 1.3	26.74 .13	62.6 0.5	55.47 .13	72.4 0.4
Oct. 6.1	51.82 .49	87.5 2.8	40.57 .12	48.4 1.6	26.62 .10	62.0 0.7	55.35 .11	71.9 0.6
16.1	51.37 .40	84.5 3.2	40.47 .09	56.6 1.9	26.54 .07	61.1 1.0	55.27 .07	71.2 0.9
26.1	51.03 .28	81.2 3.5	40.40 -.04	54.5 2.2	26.49 -.03	60.1 1.2	55.22 -.03	70.3 1.1
Nov. 5.0	50.81 .16	77.6 3.6	40.39 +.01	52.1 2.5	26.49 +.02	58.7 1.4	55.21 +.02	69.1 1.2
15.0	50.71 -.03	73.9 3.6	40.43 .06	49.5 2.7	26.54 .07	57.2 1.7	55.25 .07	67.6 1.5
25.0	50.75 +.11	70.1 3.8	40.52 .12	46.7 2.9	26.63 .12	55.4 1.9	55.34 .12	66.0 1.7
Dec. 4.9	50.93 .24	66.4 3.7	40.66 .17	43.8 2.9	26.78 .17	53.5 2.0	55.48 .16	64.2 1.9
14.9	51.24 .38	62.8 3.4	40.85 .22	40.8 2.9	26.97 .21	51.4 2.1	55.67 .21	62.3 2.0
24.9	51.68 .50	59.5 3.1	41.09 .26	38.0 2.8	27.20 .25	49.4 2.1	55.89 .24	60.3 2.0
34.9	52.23 +.60	56.6 -2.7	41.36 +.29	35.3 -2.6	27.46 +.28	47.3 -2.1	56.15 +.27	58.3 -2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Ursæ Minoris.		ϵ Coronæ Borealis.		δ Scorpîi.		β^1 Scorpîi.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	^h 15 48	^m +78° 9'	^h 15 52	^m +27° 13'	^h 15 53	^m -22° 16'	^h 15 58	^m -19° 28'
(Dec. 30.9)	^s 14.42 +.87	^s 18.6 -3.0	^s 39.44 +.26	^s 13.5 -2.7	^s 18.08 +.29	^s 53.3 -0.7	^s 31.28 +.38	^s 42.3 -0.9
Jan. 9.9	15.17 .83	15.8 2.6	39.72 .29	10.9 2.5	18.39 .32	54.1 0.9	31.58 .31	43.2 1.0
19.8	16.06 .95	13.5 2.0	40.02 .31	8.5 2.2	18.71 .33	55.1 1.0	31.90 .32	44.2 1.0
29.8	17.06 1.04	11.8 1.4	40.34 .32	6.5 1.8	19.05 .34	56.1 1.1	32.23 .33	45.3 1.1
Feb. 8.8	18.12 1.09	10.7 0.8	40.66 .33	5.0 1.3	19.39 .34	57.2 1.1	32.56 .33	46.4 1.1
18.7	19.22 1.10	10.3 -0.1	40.99 .32	3.9 0.8	19.72 .33	58.2 1.1	32.89 .33	47.4 1.0
28.7	20.31 1.07	10.5 +0.6	41.30 .31	3.4 -0.3	20.05 .32	59.3 1.0	33.21 .31	48.4 0.9
Mar. 10.7	21.35 1.00	11.4 1.2	41.60 .29	3.4 +0.2	20.36 .30	60.2 0.9	33.52 .30	49.3 0.8
20.7	22.30 .90	12.9 1.8	41.88 .27	4.0 0.8	20.65 .28	61.1 0.8	33.80 .28	50.0 0.7
30.6	23.13 .76	14.9 2.3	42.13 .24	5.0 1.2	20.92 .26	61.9 0.7	34.07 .26	50.7 0.6
Apr. 9.6	23.82 .61	17.4 2.7	42.36 .21	6.4 1.6	21.16 .23	62.5 0.6	34.32 .23	51.2 0.5
19.6	24.35 .44	20.3 3.0	42.55 .18	8.2 1.9	21.38 .21	63.1 0.5	34.54 .21	51.6 0.3
29.6	24.70 .26	23.4 3.2	42.71 .15	10.2 2.2	21.57 .18	63.5 0.4	34.73 .18	51.8 0.3
May 9.5	24.86 +.07	26.7 3.3	42.84 .11	12.5 2.3	21.74 .15	63.9 0.3	34.89 .15	52.0 0.2
19.5	24.84 -1.11	30.0 3.3	42.94 .08	14.9 2.4	21.87 .12	64.2 0.3	35.03 .12	52.1 -0.1
29.5	24.64 .29	33.2 3.1	43.00 .04	17.3 2.4	21.97 .08	64.4 0.2	35.13 .09	52.1 0.0
June 8.4	24.27 .46	36.2 2.9	43.02 +.01	19.6 2.3	22.04 .05	64.5 0.1	35.20 .05	52.1 0.0
18.4	23.73 .61	39.0 2.6	43.00 -0.03	21.9 2.1	22.07 +.02	64.6 -0.1	35.24 +.02	52.0 +0.1
28.4	23.05 .75	41.4 2.2	42.95 .07	23.9 1.9	22.06 -0.02	64.6 0.0	35.24 -0.02	51.9 0.1
July 8.4	22.24 .87	43.5 1.8	42.87 .10	25.7 1.7	22.02 .06	64.6 +0.1	35.20 .06	51.8 0.2
18.3	21.32 .97	45.0 1.3	42.76 .13	27.3 1.4	21.95 .09	64.5 0.1	35.13 .08	51.6 0.2
28.3	20.32 1.04	46.1 0.8	42.62 .16	28.6 1.1	21.85 .12	64.3 0.2	35.03 .11	51.3 0.3
Aug. 7.3	19.25 1.09	46.7 +0.3	42.45 .18	29.5 0.8	21.72 .14	64.1 0.3	34.91 .14	51.0 0.3
17.3	18.14 1.12	46.8 -0.2	42.27 .19	30.1 +0.4	21.57 .16	63.7 0.4	34.76 .15	50.7 0.4
27.2	17.02 1.12	46.3 0.7	42.07 .20	30.3 0.0	21.40 .17	63.3 0.5	34.60 .17	50.3 0.4
Sept. 6.2	15.90 1.10	45.4 1.2	41.87 .20	30.1 -0.4	21.23 .17	62.8 0.5	34.43 .17	49.8 0.5
16.2	14.82 1.05	43.9 1.7	41.68 .19	29.6 0.7	21.06 .16	62.3 0.6	34.27 .16	49.4 0.5
26.1	13.81 .97	42.0 2.2	41.50 .17	28.6 1.1	20.91 .14	61.7 0.6	34.12 .14	48.9 0.5
Oct. 6.1	12.89 .87	39.6 2.6	41.34 .14	27.3 1.5	20.79 .11	61.1 0.6	33.99 .11	48.4 0.4
16.1	12.08 .74	36.9 2.2	41.22 .11	25.7 1.8	20.69 .07	60.6 0.5	33.89 .08	48.0 0.4
26.1	11.42 .59	33.8 2.2	41.13 .07	23.7 2.1	20.64 -0.03	60.1 0.4	33.84 -0.03	47.7 0.3
Nov. 5.0	10.92 .42	30.4 2.5	41.09 -0.02	21.5 2.4	20.64 +0.02	59.8 0.3	33.83 +0.02	47.5 +0.1
15.0	10.60 .23	26.8 2.6	41.10 +0.04	18.9 2.6	20.69 .08	59.5 +0.1	33.87 .07	47.4 0.0
25.0	10.47 -0.03	23.2 2.7	41.16 .09	16.2 2.8	20.79 .13	59.5 -0.1	33.96 .12	47.5 -0.2
Dec. 5.0	10.54 +.18	19.5 2.6	41.28 .14	13.3 2.9	20.95 .18	59.7 0.3	34.11 .17	47.8 0.4
14.9	10.82 .38	15.9 2.5	41.45 .19	10.4 2.9	21.15 .26	60.0 0.5	34.31 .22	48.3 0.6
24.9	11.29 .56	12.5 2.2	41.66 .23	7.5 2.8	21.40 .27	60.6 0.7	34.55 .26	49.0 0.8
34.9	11.94 +.74	9.5 -2.8	41.91 +.27	4.7 -2.6	21.69 +.30	61.3 -0.8	34.82 +.29	49.9 -0.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	Groombridge 2320.		δ Ophiuchi.		τ Herculis.		α Scorpii. (Antares.)	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h 16	^m 5	^h 16	^m 8	^h 16	^m 16	^h 16	^m 22
		[°] +68		[°] -3		[°] +46		[°] -26
		['] 7		['] 23		['] 35		['] 9
(Dec. 30.9)	^s 57.04	+38	^s 6.64	+38	^s 8.88	+38	^s 6.80	+37
Jan. 9.9	57.47	.47	6.91	.38	9.16	.31	7.09	.30
19.8	57.98	.54	7.90	.30	9.49	.34	7.41	.33
29.8	58.56	.60	7.50	.31	9.84	.37	7.74	.34
Feb. 8.8	59.18	.63	7.81	.31	10.22	.38	8.09	.34
18.8	59.81	.64	8.12	.31	10.60	.38	8.43	.34
28.7	60.44	.63	8.42	.30	10.96	.38	8.77	.34
Mar. 10.7	61.06	.60	8.71	.38	11.35	.36	9.10	.38
20.7	61.63	.55	8.98	.36	11.70	.34	9.41	.31
30.7	62.14	.48	9.24	.34	12.02	.31	9.71	.39
Apr. 9.6	62.59	.40	9.47	.32	12.31	.37	9.99	.36
19.6	62.95	.32	9.68	.30	12.56	.33	10.24	.34
29.6	63.22	.33	9.87	.17	12.76	.18	10.46	.21
May 9.5	63.40	.13	10.02	.14	12.92	.14	10.66	.18
19.5	63.47	+03	10.15	.11	13.03	.09	10.83	.15
29.5	63.45	-.07	10.25	.08	13.09	+04	10.96	.12
June 8.5	63.34	.16	10.32	.05	13.10	-.01	11.06	.08
18.4	63.13	.25	10.35	+02	13.06	.06	11.12	+04
28.4	62.84	.33	10.36	-.01	12.97	.11	11.14	.00
July 8.4	62.47	.40	10.33	.05	12.84	.15	11.12	-.04
18.4	62.04	.47	10.26	.08	12.67	.19	11.06	.07
28.3	61.54	.52	10.17	.11	12.46	.33	10.97	.11
Aug. 7.3	61.00	.56	10.05	.13	12.22	.35	10.84	.14
17.3	60.43	.59	9.91	.15	11.95	.37	10.70	.16
27.2	59.84	.60	9.75	.16	11.67	.39	10.53	.17
Sept. 6.2	59.24	.59	9.59	.16	11.38	.39	10.35	.18
16.2	58.66	.57	9.43	.16	11.09	.38	10.17	.18
26.2	58.10	.53	9.28	.14	10.81	.36	10.00	.16
Oct. 6.1	57.59	.48	9.15	.13	10.56	.34	9.84	.14
16.1	57.14	.41	9.04	.09	10.34	.30	9.73	.10
26.1	56.77	.33	8.96	-.03	10.17	.15	9.65	.06
Nov. 5.1	56.49	.23	8.96	.00	10.05	.09	9.61	-.01
15.0	56.31	.13	8.98	+05	9.99	-.03	9.63	+05
25.0	56.24	-.02	9.05	.10	9.09	+04	9.71	.10
Dec. 5.0	56.28	+10	9.18	.15	10.06	.10	9.84	.15
14.9	56.44	.21	9.35	.19	10.19	.17	10.02	.21
24.0	56.71	.32	9.56	.23	10.39	.23	10.25	.25
34.9	57.09	+42	9.81	+26	10.64	+38	10.52	+38

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Draconis.		β Herculis.		Λ Draconis.		ζ Ophiuchi.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h 16 ^m 22	+61° 46'	^h 16 ^m 25	+21° 44'	^h 16 ^m 28	+69° 1'	^h 16 ^m 30	-10° 19'
(Dec. 30.9)	^s 20.86 +.30	48.9 -3.3	^s 5.96 +.23	52.2 -2.6	^s 10.09 +.34	18.9 -3.3	^s 36.41 +.34	30.6 -1.2
Jan. 9.9	21.20 .37	45.7 3.0	6.21 .26	49.6 2.4	10.48 .44	15.7 3.0	36.67 .27	31.7 1.2
19.9	21.60 .43	43.0 2.6	6.49 .28	47.3 2.2	10.97 .53	12.9 2.6	36.96 .29	32.9 1.2
29.8	22.06 .47	40.7 2.0	6.78 .30	45.3 1.9	11.53 .59	10.6 2.0	37.26 .31	34.1 1.1
Feb. 8.8	22.55 .50	39.0 1.4	7.09 .31	43.7 1.4	12.14 .63	8.9 1.4	37.57 .31	35.2 1.0
18.8	23.06 .52	38.0 0.8	7.40 .31	42.5 1.0	12.79 .66	7.9 0.8	37.88 .31	36.2 0.9
28.7	23.58 .51	37.6 -0.1	7.71 .31	41.7 -0.5	13.45 .65	7.5 -0.1	38.19 .31	36.9 0.7
Mar. 10.7	24.09 .49	37.9 +0.6	8.01 .29	41.5 0.0	14.09 .63	7.8 +0.6	38.49 .30	37.5 0.5
20.7	24.56 .46	38.8 1.2	8.29 .28	41.8 +0.5	14.71 .59	8.7 1.2	38.78 .28	37.9 0.3
30.7	25.00 .42	40.4 1.8	8.56 .26	42.5 0.9	15.27 .53	10.3 1.8	39.05 .26	38.1 -0.1
Apr. 9.6	25.39 .36	42.5 2.3	8.80 .23	43.7 1.3	15.77 .46	12.4 2.3	39.30 .24	38.1 +0.1
19.6	25.72 .30	45.0 2.7	9.02 .21	45.2 1.7	16.19 .38	15.0 2.7	39.54 .22	37.9 0.3
29.6	25.98 .23	47.9 3.0	9.21 .18	47.0 1.9	16.52 .29	17.9 3.1	39.75 .20	37.6 0.4
May 9.6	26.17 .16	51.1 3.2	9.38 .15	49.1 2.1	16.76 .19	21.1 3.3	39.93 .17	37.1 0.5
19.5	26.29 .08	54.4 3.3	9.51 .11	51.3 2.2	16.89 +.08	24.5 3.3	40.09 .14	36.5 0.6
29.5	26.33 +.01	57.7 3.3	9.60 .08	53.5 2.3	16.92 -.02	27.8 3.3	40.21 .11	35.9 0.6
June 8.5	26.30 -.07	61.0 3.2	9.66 .04	55.8 2.2	16.85 .12	31.1 3.2	40.31 .08	35.3 0.6
18.4	26.19 .14	64.1 3.0	9.68 +.01	58.0 2.1	16.68 .22	34.2 3.0	40.36 .04	34.7 0.6
28.4	26.01 .21	66.9 2.7	9.67 -.03	60.0 2.0	16.42 .31	37.1 2.8	40.39 +.01	34.1 0.6
July 8.4	25.77 .27	69.4 2.4	9.62 .06	61.9 1.8	16.07 .39	39.7 2.4	40.38 -.03	33.5 0.6
18.4	25.47 .32	71.6 2.0	9.54 .09	63.6 1.5	15.65 .46	41.9 2.0	40.33 .06	32.9 0.5
28.3	25.12 .37	73.3 1.5	9.42 .13	65.0 1.3	15.15 .52	43.6 1.5	40.25 .09	32.4 0.5
Aug. 7.3	24.72 .41	74.6 1.0	9.28 .15	66.1 1.0	14.60 .57	44.9 1.1	40.14 .12	31.9 0.5
17.3	24.29 .44	75.4 +0.5	9.12 .17	66.9 0.7	14.01 .61	45.7 +0.6	40.00 .15	31.5 0.4
27.3	23.84 .46	75.6 0.0	8.93 .19	67.3 +0.3	13.39 .63	46.0 0.0	39.85 .16	31.1 0.4
Sept. 6.2	23.38 .46	75.4 -0.5	8.74 .19	67.5 0.0	12.75 .63	45.8 -0.5	39.68 .17	30.8 0.3
16.2	22.92 .45	74.6 1.0	8.55 .19	67.3 -0.4	12.12 .62	45.0 1.0	39.51 .16	30.5 0.2
26.2	22.48 .43	73.3 1.5	8.36 .18	66.7 0.7	11.51 .59	43.7 1.5	39.35 .15	30.4 0.2
Oct. 6.1	22.07 .39	71.5 2.0	8.19 .16	65.8 1.1	10.95 .54	42.0 2.0	39.21 .13	30.3 +0.1
16.1	21.71 .34	69.3 2.4	8.05 .13	64.6 1.4	10.43 .48	39.7 2.4	39.09 .10	30.3 -0.1
26.1	21.41 .27	66.6 2.8	7.95 .09	63.0 1.7	9.99 .40	37.1 2.8	39.01 .08	30.4 0.2
Nov. 5.1	21.17 .20	63.6 3.2	7.88 -.04	61.1 2.0	9.64 .30	34.1 3.2	38.97 -.02	30.7 0.4
15.0	21.02 .11	60.3 3.4	7.87 +.01	59.0 2.3	9.39 .20	30.7 3.4	38.98 +.03	31.1 0.5
25.0	20.95 -.02	56.8 3.6	7.90 .06	56.6 2.5	9.25 -.08	27.2 3.6	39.04 .08	31.7 0.7
Dec. 5.0	20.98 +.07	53.1 3.7	7.99 .11	54.1 2.6	9.23 +.04	23.5 3.7	39.15 .13	32.5 0.9
15.0	21.10 .16	49.4 3.6	8.13 .16	51.4 2.7	9.33 .16	19.8 3.6	39.30 .18	33.4 1.0
24.9	21.31 .25	45.8 3.5	8.31 .20	48.7 2.7	9.55 .28	16.2 3.5	39.50 .22	34.5 1.1
34.9	21.61 +.33	42.4 -3.3	8.53 +.24	46.1 -2.6	9.88 +.38	12.8 -3.3	39.74 +.26	35.6 -1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Trianguli Australis.		η Herculis.		κ Ophiuchi.		δ Herculis.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 16 36	^m -68° 48'	^h 16 38	^m +39° 8'	^h 16 52	^m +9° 33'	^h 16 57	^m +33° 44'
(Dec. 30.9)	^s 3.70 +.56	^s 15.7 +1.8	^s 48.17 +.22	^s 48.5 -3.1	^s 1.94 +.21	^s 36.1 -2.0	^s 12.08 +.20	^s 22.1 -3.0
Jan. 9.9	4.30 .63	14.0 1.5	48.41 .96	45.5 2.9	2.17 .24	34.0 2.0	12.30 .24	19.2 2.8
19.8	4.97 .70	12.6 1.1	48.70 .30	42.7 2.6	2.42 .26	32.1 1.9	12.56 .27	16.5 2.5
29.8	5.70 .74	11.8 0.7	49.01 .32	40.4 2.1	2.70 .28	30.3 1.6	12.85 .30	14.2 2.2
Feb. 8.8	6.46 .77	11.3 +0.3	49.35 .34	38.5 1.6	2.99 .29	28.9 1.3	13.16 .32	12.2 1.7
18.8	7.24 .78	11.2 -0.1	49.69 .35	37.2 1.1	3.29 .30	27.7 1.0	13.48 .33	10.8 1.2
28.7	8.02 .78	11.6 0.5	50.04 .35	36.5 -0.5	3.59 .30	26.9 0.6	13.81 .33	9.9 -0.6
Mar. 10.7	8.79 .76	12.3 0.9	50.38 .34	36.4 +0.3	3.88 .29	26.5 -0.2	14.14 .32	9.6 0.0
20.7	9.53 .72	13.4 1.2	50.71 .32	36.8 0.8	4.16 .28	26.4 +0.2	14.46 .32	9.9 +0.5
30.7	10.24 .68	14.8 1.6	51.02 .30	37.9 1.3	4.43 .27	26.8 0.5	14.76 .29	10.8 1.1
Apr. 9.6	10.89 .63	16.5 1.8	51.30 .27	39.5 1.8	4.69 .25	27.5 0.9	15.04 .27	12.1 1.6
19.6	11.49 .57	18.5 2.1	51.55 .24	41.5 2.2	4.93 .23	28.6 1.2	15.30 .24	13.9 2.0
29.6	12.02 .50	20.7 2.3	51.77 .20	43.9 2.5	5.14 .20	29.9 1.4	15.52 .21	16.1 2.3
May 9.5	12.48 .42	23.0 2.4	51.95 .16	46.6 2.8	5.33 .18	31.4 1.6	15.72 .18	18.6 2.6
19.5	12.85 .33	25.5 2.5	52.09 .12	49.4 2.9	5.49 .15	33.1 1.7	15.88 .14	21.2 2.7
29.5	13.13 .24	28.0 2.5	52.19 .08	52.3 2.9	5.62 .11	34.9 1.8	16.00 .10	24.0 2.8
June 8.5	13.32 .14	30.5 2.5	52.24 +.03	55.3 2.9	5.71 .08	36.6 1.8	16.08 .06	27.0 2.8
18.4	13.41 +.04	32.0 2.4	52.25 -0.1	58.1 2.8	5.77 .05	38.4 1.7	16.12 +.02	29.6 2.7
28.4	13.40 -0.06	35.4 2.3	52.21 .06	60.8 2.6	5.80 +.01	40.1 1.6	16.12 -0.02	32.2 2.5
July 8.4	13.29 .15	37.5 2.1	52.13 .10	63.2 2.3	5.79 -0.03	41.6 1.5	16.07 .07	34.7 2.3
18.4	13.08 .25	39.4 1.8	52.01 .14	65.4 2.0	5.74 .06	43.0 1.3	15.98 .11	36.9 2.0
28.3	12.78 .33	41.1 1.4	51.85 .17	67.2 1.6	5.66 .10	44.3 1.1	15.85 .14	38.8 1.7
Aug. 7.3	12.41 .40	42.3 1.0	51.66 .20	68.6 1.2	5.55 .13	45.3 0.9	15.69 .17	40.3 1.4
17.3	11.98 .46	43.1 0.6	51.44 .23	69.6 0.8	5.41 .15	46.1 0.7	15.50 .20	41.5 1.0
27.2	11.50 .49	43.5 -0.2	51.20 .25	70.2 +0.4	5.25 .17	46.7 0.5	15.29 .22	42.3 0.6
Sept. 6.2	10.99 .51	43.4 +0.3	50.95 .25	70.3 -0.1	5.07 .18	47.0 +0.2	15.06 .23	42.6 +0.2
16.2	10.48 .50	42.8 0.8	50.70 .25	70.0 0.5	4.90 .18	47.1 0.0	14.82 .23	42.5 -0.3
26.2	10.00 .46	41.7 1.3	50.45 .24	69.2 1.0	4.72 .17	47.0 -0.3	14.59 .23	42.0 0.7
Oct. 6.1	9.56 .41	40.2 1.7	50.22 .22	68.0 1.4	4.56 .15	46.5 0.6	14.37 .21	41.1 1.1
16.1	9.19 .33	38.3 2.0	50.02 .19	66.4 1.8	4.42 .13	45.8 0.8	14.18 .18	39.8 1.5
26.1	8.90 .23	36.1 2.3	49.85 .14	64.3 2.2	4.31 .09	44.9 1.1	14.02 .14	38.0 1.9
Nov. 5.1	8.73 -1.2	33.6 2.5	49.74 .09	61.9 2.6	4.24 .05	43.7 1.3	13.90 .10	35.9 2.3
15.0	8.68 .00	31.0 2.6	49.67 -0.4	59.2 2.9	4.21 -0.1	42.2 1.6	13.83 -0.05	33.5 2.6
25.0	8.75 +.13	28.4 2.6	49.66 +.02	56.2 3.1	4.23 +.04	40.5 1.8	13.81 +.01	30.7 2.8
Dec. 5.0	8.95 .26	25.8 2.5	49.71 .08	53.0 3.2	4.30 .09	38.7 1.9	13.85 .06	27.8 3.0
14.9	9.27 .28	23.4 2.3	49.82 .13	49.7 3.3	4.42 .14	36.6 2.0	13.94 .12	24.7 3.1
24.9	9.71 .48	21.1 2.1	49.99 .19	46.4 3.2	4.58 .18	34.6 2.1	14.08 .17	21.7 3.1
34.9	10.25 +.56	19.2 +1.8	50.20 +.24	43.3 -3.0	4.78 +.21	32.5 -2.1	14.28 +.21	18.6 -3.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ϵ Ursæ Minoris.		α^1 Herculis.		δ Ophiuchi.		β Draconis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 16 57	^m +82° 13'	^h 17 9	^m +14° 31'	^h 17 19	^m -24° 3'	^h 17 27	^m +52° 23'
(Dec. 30.9)	^s 61.22 +.50	^s 40.9 -3.3	^s 12.97 +.19	^s 33.4 -2.3	^s 6.11 +.28	^s 50.1 -0.2	^s 43.04 +.17	^s 17.8 -3.5
Jan. 9.9	61.88 .80	37.7 3.0	13.18 .98	31.2 2.2	6.35 .98	50.3 0.2	43.24 .23	14.4 3.3
19.9	62.82 1.06	34.8 2.7	13.42 .96	29.1 2.0	6.62 .98	50.6 0.3	43.50 .28	11.3 3.0
29.8	63.99 1.28	32.4 2.2	13.69 .97	27.2 1.8	6.92 .31	51.0 0.4	43.81 .33	8.6 2.6
Feb. 8.8	65.36 1.45	30.5 1.6	13.97 .99	25.6 1.5	7.23 .38	51.3 0.4	44.17 .37	6.3 2.1
18.8	66.88 1.56	29.2 1.0	14.26 .30	24.3 1.1	7.56 .33	51.7 0.4	44.55 .39	4.5 1.5
28.8	68.48 1.62	28.6 -0.4	14.56 .30	23.4 0.7	7.89 .33	52.1 0.3	44.95 .41	3.3 0.9
Mar. 10.7	70.10 1.61	28.6 +0.3	14.86 .29	23.0 -0.2	8.22 .33	52.4 0.3	45.36 .41	2.8 -0.2
20.7	71.68 1.54	29.2 0.9	15.15 .29	23.1 +0.2	8.54 .32	52.7 0.2	45.77 .40	3.0 +0.5
30.7	73.16 1.42	30.5 1.5	15.43 .27	23.5 0.6	8.86 .31	52.9 0.2	46.17 .39	3.8 1.1
Apr. 9.6	74.50 1.25	32.3 2.1	15.70 .26	24.4 1.0	9.16 .30	53.0 0.2	46.54 .38	5.2 1.7
19.6	75.64 1.04	34.6 2.5	15.94 .24	25.6 1.4	9.45 .28	53.1 -0.1	46.89 .33	7.2 2.2
29.6	76.56 .79	37.3 2.9	16.17 .22	27.1 1.6	9.72 .28	53.2 0.0	47.19 .29	9.6 2.6
May 9.6	77.22 .53	40.4 3.1	16.37 .19	28.9 1.8	9.96 .23	53.2 0.0	47.46 .24	12.4 2.9
19.5	77.61 +.25	43.6 3.3	16.54 .16	30.8 2.0	10.18 .20	53.2 0.0	47.67 .19	15.5 3.2
29.5	77.72 -.03	46.9 3.3	16.69 .13	32.8 2.1	10.37 .17	53.2 0.0	47.83 .13	18.7 3.3
June 8.5	77.54 .31	50.2 3.2	16.80 .09	34.9 2.1	10.52 .14	53.2 0.0	47.93 .07	22.1 3.3
18.5	77.09 .58	53.4 3.1	16.87 .06	37.0 2.0	10.63 .10	53.3 -0.1	47.97 +.01	25.4 3.3
28.4	76.38 .84	56.3 2.9	16.91 +.02	38.9 1.9	10.71 .06	53.3 0.1	47.95 -.05	28.6 3.1
July 8.4	75.42 1.07	59.1 2.6	16.90 -.02	40.8 1.8	10.74 +.01	53.4 0.1	47.87 .11	31.6 2.9
18.4	74.25 1.28	61.5 2.2	16.86 .06	42.5 1.6	10.73 -.03	53.5 0.1	47.73 .16	34.4 2.6
28.3	72.88 1.45	63.5 1.8	16.79 .09	43.9 1.4	10.68 .07	53.6 -0.1	47.54 .21	36.8 2.3
Aug. 7.3	71.35 1.60	65.0 1.4	16.68 .12	45.1 1.1	10.59 .11	53.6 0.0	47.31 .26	38.9 1.9
17.3	69.69 1.71	66.1 0.9	16.54 .15	46.1 0.9	10.46 .14	53.6 0.0	47.02 .30	40.5 1.4
27.3	67.95 1.78	66.8 +0.4	16.38 .17	46.8 0.6	10.31 .16	53.6 +0.1	46.71 .33	41.7 1.0
Sept. 6.2	66.14 1.82	66.9 -0.2	16.20 .18	47.3 +0.3	10.13 .18	53.5 0.2	46.37 .34	42.4 +0.5
16.2	64.33 1.80	66.5 0.6	16.01 .19	47.4 0.0	9.95 .19	53.3 0.2	46.02 .35	42.6 0.0
26.2	62.55 1.75	65.6 1.1	15.82 .18	47.2 -0.3	9.76 .18	53.0 0.3	45.67 .35	42.3 -0.5
Oct. 6.2	60.84 1.66	64.2 1.6	15.65 .17	46.8 0.6	9.59 .17	52.7 0.3	45.32 .33	41.5 1.0
16.1	59.24 1.53	62.4 2.0	15.49 .14	46.0 0.9	9.43 .14	52.3 0.4	45.00 .30	40.2 1.5
26.1	57.79 1.35	60.1 2.5	15.36 .11	45.0 1.2	9.31 .10	52.0 0.4	44.71 .26	38.4 2.0
Nov. 5.1	56.54 1.14	57.4 2.8	15.27 .07	43.6 1.5	9.23 .08	51.6 0.4	44.47 .23	36.1 2.4
15.0	55.53 .88	54.4 3.1	15.23 -.03	42.0 1.7	9.19 -.01	51.2 0.3	44.29 .16	33.5 2.8
25.0	54.79 .60	51.2 3.3	15.23 +.02	40.1 2.0	9.21 +.04	50.9 0.3	44.17 .09	30.5 3.1
Dec. 5.0	54.33 -.31	47.7 3.5	15.28 .07	38.1 2.1	9.28 .09	50.7 +0.1	44.12 -.02	27.2 3.3
15.0	54.19 +.01	44.2 3.5	15.37 .12	35.9 2.2	9.40 .14	50.6 0.0	44.14 +.05	23.8 3.5
24.9	54.36 .33	40.7 3.4	15.52 .16	33.6 2.3	9.57 .18	50.7 -0.1	44.23 .12	20.3 3.5
34.9	54.84 +.63	37.4 -3.2	15.70 +.20	31.3 -2.4	9.78 +.22	50.8 -0.2	44.39 +.18	16.8 -3.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ophiuchi.		ω Draconis.		μ Herculis.		ψ^1 Draconis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 17 29	^m +12° 38'	^h 17 37	^m +68° 48'	^h 17 41	^m +27° 47'	^h 17 43	^m +72° 12'
Jan. 0.0	^s 24.30 +.17	["] 49.2 -2.2	^s 35.92 +.17	["] 40.8 -3.6	^s 47.47 +.15	["] 24.8 -2.8	^s 58.68 +.15	["] 19.7 -3.5
9.9	24.49 .21	47.0 2.1	35.44 .37	37.3 3.4	47.64 .19	22.0 2.7	58.90 .39	16.3 3.4
19.9	24.72 .24	45.0 2.0	35.77 .37	34.1 3.1	47.86 .33	19.4 2.5	59.25 .41	13.0 3.1
29.9	24.97 .28	43.2 1.7	36.20 .46	31.2 2.7	48.10 .36	17.0 2.2	59.72 .52	10.1 2.7
Feb. 8.8	25.25 .32	41.6 1.4	36.71 .54	28.8 2.2	48.38 .38	15.0 1.8	60.29 .62	7.6 2.2
18.8	25.53 .39	40.3 1.1	37.28 .59	26.9 1.6	48.67 .30	13.4 1.4	60.94 .69	5.7 1.6
28.8	25.82 .39	39.5 0.7	37.90 .63	25.7 0.9	48.97 .31	12.3 0.9	61.65 .73	4.4 1.0
Mar. 10.7	26.12 .39	39.0 -0.3	38.54 .64	25.1 -0.3	49.28 .31	11.7 -0.4	62.39 .75	3.7 -0.4
20.7	26.41 .39	39.0 +0.1	39.18 .64	25.2 +0.4	49.59 .31	11.6 +0.2	63.14 .75	3.7 +0.3
30.7	26.70 .38	39.3 0.6	39.81 .61	26.0 1.1	49.89 .30	12.1 0.7	63.88 .72	4.4 1.0
Apr. 9.7	26.97 .37	40.1 0.9	40.40 .57	27.4 1.7	50.19 .39	13.1 1.2	64.57 .67	5.7 1.6
19.6	27.23 .35	41.2 1.3	40.94 .51	29.4 2.2	50.46 .37	14.6 1.6	65.21 .60	7.6 2.1
29.6	27.47 .33	42.7 1.6	41.41 .44	31.8 2.6	50.72 .34	16.4 2.0	65.77 .51	10.0 2.6
May 9.6	27.69 .31	44.4 1.8	41.81 .35	34.7 3.0	50.95 .39	18.6 2.3	66.23 .42	12.8 2.9
19.6	27.88 .18	46.2 1.9	42.11 .26	37.9 3.3	51.15 .19	21.0 2.5	66.59 .31	15.9 3.2
29.5	28.04 .15	48.2 2.0	42.32 .16	41.2 3.4	51.32 .15	23.6 2.6	66.83 .19	19.2 3.4
June 8.5	28.17 .11	50.3 2.0	42.43 +.06	44.7 3.5	51.45 .11	26.3 2.7	66.95 +.06	22.6 3.4
18.5	28.27 .08	52.3 2.0	42.43 -.04	48.1 3.4	51.54 .07	29.0 2.7	66.96 -.06	26.1 3.4
28.4	28.32 +.04	54.2 1.9	42.33 .15	51.5 3.3	51.59 +.03	31.6 2.6	66.83 .18	29.4 3.3
July 8.4	28.34 .00	56.1 1.8	42.13 .24	54.7 3.1	51.60 -.01	34.1 2.4	66.59 .30	32.6 3.1
18.4	28.32 -.04	57.8 1.6	41.84 .33	57.6 2.8	51.56 .06	36.4 2.2	66.24 .40	35.6 2.8
28.4	28.26 .06	59.2 1.4	41.46 .42	60.2 2.4	51.49 .10	38.5 1.9	65.79 .50	38.2 2.5
Aug. 7.3	28.16 .11	60.5 1.2	41.00 .49	62.4 2.0	51.37 .13	40.2 1.6	65.24 .59	40.5 2.1
17.3	28.03 .14	61.5 0.9	40.47 .55	61.2 1.6	51.22 .17	41.7 1.3	64.61 .68	42.4 1.6
27.3	27.88 .16	62.3 0.7	39.89 .60	65.5 1.1	51.04 .19	42.8 0.9	63.92 .72	43.7 1.2
Sept. 6.3	27.71 .18	62.8 0.4	39.27 .63	66.4 0.6	50.84 .21	43.5 0.5	63.18 .76	44.6 0.7
16.2	27.52 .19	63.1 +0.1	38.63 .64	66.7 +0.1	50.62 .22	43.8 +0.2	62.41 .78	45.0 +0.2
26.2	27.33 .18	63.0 -0.2	37.98 .64	66.5 -0.4	50.40 .22	43.7 -0.2	61.63 .78	44.9 -0.4
Oct. 6.2	27.15 .17	62.7 0.5	37.35 .62	65.8 1.0	50.18 .21	43.3 0.6	60.86 .75	44.3 0.9
16.1	26.99 .15	62.1 0.8	36.75 .58	64.5 1.5	49.98 .19	42.4 1.0	60.13 .71	43.1 1.4
26.1	26.86 .12	61.2 1.0	36.19 .52	62.7 2.0	49.81 .16	41.2 1.4	59.45 .63	41.4 1.9
Nov. 5.1	26.76 .08	60.0 1.3	35.70 .45	60.5 2.4	49.67 .12	39.6 1.8	58.84 .56	39.2 2.4
15.1	26.70 -.04	58.5 1.6	35.30 .36	57.8 2.8	49.57 .08	37.6 2.1	58.33 .46	36.6 2.8
25.0	26.68 +.01	56.8 1.8	34.99 .26	54.8 3.2	49.52 -.03	35.3 2.4	57.93 .34	33.7 3.1
Dec. 5.0	26.71 .05	54.8 2.0	34.79 .15	51.5 3.4	49.52 +.02	32.8 2.8	57.65 .21	30.4 3.4
15.0	26.79 .10	52.8 2.1	34.71 -.03	48.0 3.5	49.57 .07	30.1 2.8	57.51 -.07	26.9 3.5
25.0	26.91 .14	50.6 2.2	34.74 +.09	44.4 3.5	49.66 .12	27.3 2.8	57.51 +.07	23.4 3.6
34.9	27.08 +.18	48.5 -2.2	34.89 +.21	40.9 -3.4	49.81 +.16	24.5 -2.7	57.65 +.20	19.8 -3.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Draconis.		γ^s Sagittarii.		μ Sagittarii.		η Serpentis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	^h 17 53	^m +51° 29'	^h 17 58	^m -30° 25'	^h 18 6	^m -21° 5'	^h 18 15	^m -2° 55'
Jan. 0.0	48.94 +.12	68.8 -3.6	9.64 +.19	24.5 +0.4	38.64 +.17	17.4 -0.1	8.91 +.14	41.6 -1.2
9.9	49.10 .19	65.4 3.5	9.85 .33	24.1 0.4	38.83 .31	17.6 0.2	9.07 .18	42.8 1.2
19.9	49.33 .35	62.2 3.2	10.10 .37	23.8 0.3	39.06 .34	17.7 0.2	9.27 .31	44.0 1.1
29.9	49.60 .30	59.3 2.9	10.38 .30	23.5 0.2	39.31 .37	17.9 0.2	9.49 .34	45.1 1.0
Feb. 8.9	49.92 .34	56.8 2.4	10.69 .33	23.4 0.2	39.59 .39	18.1 0.2	9.74 .36	46.1 0.9
18.8	50.28 .37	54.8 1.9	11.01 .33	23.2 0.1	39.88 .30	18.2 -0.1	10.00 .37	46.8 0.7
28.8	50.67 .39	53.4 1.3	11.35 .34	23.1 0.1	40.19 .31	18.3 0.0	10.28 .38	47.4 0.4
Mar. 10.8	51.07 .40	52.6 -0.6	11.69 .34	23.0 0.1	40.51 .32	18.3 0.0	10.57 .39	47.7 -0.1
20.8	51.47 .40	52.5 0.0	12.03 .34	23.0 0.1	40.82 .33	18.2 +0.1	10.86 .39	47.7 +0.1
30.7	51.87 .39	53.1 +0.7	12.37 .34	22.9 +0.1	41.14 .32	18.0 0.2	11.15 .39	47.4 0.4
Apr. 9.7	52.25 .37	54.2 1.3	12.71 .33	22.9 0.0	41.45 .31	17.7 0.3	11.44 .38	46.9 0.6
19.7	52.61 .35	56.0 1.8	13.03 .33	22.9 0.0	41.76 .30	17.4 0.4	11.72 .36	46.1 0.9
29.6	52.94 .31	58.2 2.3	13.34 .30	22.9 0.0	42.05 .28	17.0 0.4	11.99 .36	45.1 1.1
May 9.6	53.23 .27	60.8 2.6	13.63 .28	22.9 -0.1	42.32 .26	16.6 0.4	12.24 .34	44.0 1.2
19.6	53.48 .28	63.8 2.9	13.89 .25	23.0 0.1	42.57 .24	16.2 0.4	12.47 .32	42.7 1.3
29.6	53.67 .17	67.0 3.1	14.13 .22	23.2 0.2	42.80 .21	15.8 0.4	12.68 .19	41.4 1.3
June 8.5	53.81 .11	70.3 3.2	14.33 .18	23.4 0.3	42.99 .18	15.5 0.3	12.86 .16	40.0 1.3
18.5	53.89 +.05	73.7 3.2	14.49 .14	23.7 0.3	43.15 .14	15.2 0.3	13.01 .13	38.7 1.3
28.5	53.91 -0.1	77.0 3.1	14.61 .10	24.1 0.4	43.27 .10	15.0 0.2	13.12 .09	37.4 1.2
July 8.4	53.88 .07	80.2 2.9	14.68 +.05	24.5 0.4	43.34 .06	14.8 0.1	13.19 .05	36.2 1.1
18.4	53.78 .12	83.1 2.7	14.71 .00	24.9 0.4	43.37 +.01	14.7 +0.1	13.22 +.01	35.1 1.0
28.4	53.62 .18	85.8 2.4	14.68 -0.4	25.3 0.4	43.36 -0.3	14.7 0.0	13.21 -0.3	34.2 0.9
Aug. 7.4	53.42 .23	88.2 2.0	14.62 .09	25.7 0.4	43.30 .07	14.7 0.0	13.16 .07	33.4 0.8
17.3	53.16 .37	90.1 1.6	14.51 .13	26.1 0.3	43.21 .11	14.7 0.0	13.07 .11	32.7 0.6
27.3	52.87 .31	91.6 1.1	14.36 .16	26.4 0.2	43.08 .14	14.7 0.0	12.94 .14	32.2 0.5
Sept. 6.3	52.55 .33	92.6 0.7	14.19 .18	26.6 -0.1	42.92 .17	14.7 0.0	12.79 .16	31.8 0.3
16.3	52.21 .34	93.2 +0.2	13.99 .20	26.6 0.0	42.75 .18	14.7 0.0	12.63 .17	31.6 +0.2
26.2	51.86 .35	93.2 -0.4	13.79 .20	26.5 +0.1	42.56 .18	14.7 +0.1	12.45 .18	31.5 0.0
Oct. 6.2	51.52 .34	92.8 0.9	13.60 .19	26.3 0.3	42.38 .18	14.6 0.1	12.27 .17	31.5 -0.1
16.2	51.19 .31	91.8 1.4	13.41 .17	26.0 0.4	42.21 .16	14.4 0.1	12.11 .16	31.7 0.3
26.1	50.89 .28	90.3 1.8	13.26 .14	25.5 0.5	42.06 .13	14.3 0.2	11.96 .13	32.1 0.4
Nov. 5.1	50.63 .24	88.4 2.3	13.14 .10	25.0 0.6	41.95 .10	14.1 0.2	11.84 .10	32.6 0.6
15.1	50.43 .18	86.0 2.7	13.07 -0.5	24.4 0.6	41.87 .05	14.0 0.1	11.76 .06	33.2 0.7
25.1	50.28 .12	83.3 3.1	13.04 .00	23.8 0.6	41.84 -0.1	13.8 0.1	11.72 -0.2	34.1 0.9
Dec. 5.0	50.19 -0.5	80.2 3.3	13.07 +0.5	23.2 0.6	41.86 +0.4	13.7 +0.1	11.72 +0.3	35.0 1.0
15.0	50.17 +0.1	76.9 3.5	13.16 .11	22.6 0.5	41.93 .09	13.7 0.0	11.77 .07	36.1 1.1
25.0	50.23 .08	73.4 3.6	13.29 .16	22.1 0.5	42.05 .15	13.8 -0.1	11.86 .11	37.2 1.2
35.0	50.35 +.14	70.0 -3.6	13.47 +.21	21.6 +0.4	42.21 +.18	13.9 -0.1	11.99 +.15	38.4 -1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	σ Octantis.		1 Aquilæ.		α Lyre. (Vega.)		β Lyre.	
	Right Ascension.	Declination. South.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 18	[°] -89 16'	^h 18 28	[°] -8 19'	^h 18 32	[°] +38 40'	^h 18 45	[°] +33 13'
Jan. 0.0	^m 25 9.5 +5.6	["] 25.2 +3.4	^s 43.67 +.13	["] 33.1 -0.9	^s 53.56 +.09	["] 25.5 -3.1	^s 40.38 +.08	["] 32.3 -2.9
10.0	25 16.6 8.7	21.8 3.3	43.83 .17	34.0 0.8	53.68 .14	22.4 3.0	40.48 .13	29.5 2.6
19.9	25 26.8 11.5	18.7 3.0	44.01 .30	34.8 0.8	53.84 .19	19.5 2.9	40.63 .17	26.7 2.7
29.9	25 39.6 14.0	15.8 2.7	44.23 .33	35.5 0.7	54.05 .33	16.7 2.6	40.82 .31	24.1 2.5
Feb. 8.9	25 54.7 16.1	13.3 2.3	44.47 .35	36.2 0.6	54.29 .36	14.2 2.3	41.04 .34	21.7 2.2
18.8	26 11.7 17.8	11.1 1.9	44.74 .37	36.7 0.4	54.57 .39	12.2 1.8	41.30 .37	19.7 1.8
28.8	26 30.2 19.1	9.4 1.5	45.01 .38	37.0 -0.2	54.87 .31	10.6 1.3	41.58 .39	18.2 1.3
Mar. 10.8	26 49.7 19.9	8.2 1.0	45.30 .39	37.2 0.0	55.10 .33	9 0 0.7	41.88 .31	17.2 0.7
20.8	27 9.8 20.3	7.5 +0.5	45.59 .30	37.1 +0.2	55.53 .34	9.2 -0.1	42.20 .32	16.8 -0.2
30.7	27 30.0 20.2	7.3 0.0	45.89 .30	36.7 0.4	55.87 .34	9.4 +0.5	42.52 .32	16.9 +0.4
Apr. 9.7	27 49.9 19.7	7.5 -0.5	46.19 .29	36.2 0.6	56.20 .33	10.2 1.1	42.84 .32	17.6 0.9
19.7	28 9.2 18.8	8.2 0.9	46.48 .29	35.5 0.8	56.53 .32	11.5 1.6	43.15 .31	18.8 1.4
29.7	28 27.4 17.5	9.4 1.4	46.76 .27	34.6 0.9	56.84 .30	13.3 2.1	43.46 .30	20.4 1.9
May 9.6	28 44.1 15.9	11.0 1.8	47.03 .26	33.6 1.0	57.13 .27	15.6 2.4	43.74 .28	22.5 2.3
19.6	28 59.1 14.0	12.9 2.2	47.28 .24	32.5 1.1	57.39 .24	18.2 2.8	44.01 .25	25.0 2.6
29.6	29 12.0 11.7	15.2 2.5	47.50 .21	31.4 1.1	57.62 .20	21.1 3.0	44.24 .21	27.7 2.8
June 8.5	29 22.4 9.3	17.8 2.7	47.70 .18	30.3 1.1	57.80 .16	24.2 3.1	44.44 .18	30.6 2.9
18.5	29 30.2 6.5	20.6 2.9	47.86 .15	29.2 1.1	57.94 .12	27.3 3.2	44.59 .14	33.6 3.0
28.5	29 35.1 3.5	23.5 3.0	47.99 .11	28.2 1.0	58.04 .07	30.5 3.1	44.70 .09	36.6 3.0
July 8.5	29 37.1 +0.4	26.5 3.0	48.08 .07	27.2 0.9	58.08 +.02	33.6 3.0	44.77 +.04	39.6 2.9
18.4	29 36.0 -2.6	29.4 2.9	48.13 +.02	26.4 0.8	58.08 -.03	36.5 2.8	44.79 -.01	42.4 2.7
28.4	29 31.8 5.6	32.3 2.8	48.13 -.02	25.7 0.7	58.02 .08	39.3 2.6	44.76 .05	45.1 2.5
Aug. 7.4	29 24.8 8.4	35.0 2.5	48.09 .06	25.1 0.5	57.92 .13	41.7 2.3	44.68 .10	47.4 2.2
17.4	29 15.1 10.9	37.3 2.1	48.01 .10	24.6 0.4	57.77 .17	43.8 2.0	44.56 .14	49.5 1.9
27.3	29 3.0 13.0	39.1 1.7	47.90 .12	24.2 0.3	57.58 .20	45.6 1.6	44.40 .18	51.3 1.5
Sept. 6.3	28 48.0 14.7	40.6 1.2	47.75 .15	24.0 0.2	57.36 .23	47.0 1.2	44.21 .20	52.7 1.1
16.3	28 33.4 15.9	41.5 0.7	47.59 .17	23.8 +0.1	57.12 .25	47.9 0.7	44 00 .22	53.6 0.8
26.2	28 17.0 16.4	41.9 -0.1	47.42 .18	23.7 0.0	56.86 .26	48.4 +0.3	43.77 .23	54.2 +0.4
Oct. 6.2	28 0.4 16.3	41.7 +0.5	47.24 .18	23.8 -0.1	56.60 .28	48.4 -0.2	43.53 .23	54.3 -0.1
16.2	27 44.2 15.5	40.8 1.1	47.07 .16	23.9 0.2	56.35 .24	48.0 0.7	43.30 .22	54.0 0.5
26.2	27 29.1 14.1	39.4 1.7	46.92 .14	24.1 0.3	56.11 .22	47.1 1.1	43.08 .20	53.3 1.0
Nov. 5.1	27 15.7 12.1	37.4 2.2	46.80 .11	24.4 0.4	55.90 .19	45.8 1.6	42.89 .18	52.1 1.4
15.1	27 4.6 9.6	34.9 2.6	46.71 .07	24.8 0.5	55.73 .15	44.0 2.0	42.73 .14	50.6 1.8
25.1	26 56.3 6.7	32.1 3.0	46.66 -.02	25.3 0.6	55.61 .10	41.8 2.4	42.61 .10	48.6 2.1
Dec. 5.1	26 51.1 3.5	28.9 3.3	46.66 +.02	26.0 0.7	55.53 -.05	39.2 2.7	42.53 -.05	46.3 2.4
15.0	26 49.2 -0.2	25.5 3.4	46.70 .06	26.7 0.7	55.50 .00	36.5 2.9	42.51 .00	43.7 2.7
25.0	26 50.7 +3.1	22.1 3.5	46.78 .10	27.5 0.8	55.53 +.05	33.5 3.0	42.53 +.05	41.0 2.8
35.0	26 55.5 +6.3	18.7 +3.4	46.91 +.14	28.3 -0.8	55.61 +.10	30.4 -3.1	42.60 +.10	38.1 -2.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	σ Sagittarii.		50 Draconis.		ζ Aquile.		δ Sagittarii.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h 18 47	^m -26 26	^h 18 50	^m +75 17	^h 18 59	^m +13 41	^h 19 10	^m -19 9
Jan. 0.0	52.97 +.13	33.9 +0.4	6.25 -0.08	37.4 -3.4	56.04 +.08	17.2 -2.0	40.13 +.10	47.0 0.0
10.0	53.12 .17	33.5 0.4	6.25 +.08	34.0 3.4	56.15 .12	15.2 2.0	40.25 .14	47.0 0.0
20.0	53.31 .21	33.2 0.4	6.41 .25	30.6 3.3	56.29 .16	13.3 1.9	40.40 .17	47.0 0.0
29.9	53.54 .24	32.8 0.4	6.74 .40	27.4 3.1	56.46 .19	11.5 1.7	40.59 .21	47.0 +0.1
Feb. 8.9	53.79 .27	32.5 0.4	7.21 .54	24.4 2.8	56.67 .22	9.9 1.5	40.82 .22	46.9 0.1
18.9	54.07 .29	32.1 0.4	7.82 .08	21.8 2.3	56.90 .24	8.5 1.2	41.06 .26	46.7 0.2
28.8	54.37 .31	31.7 0.4	8.54 .76	19.8 1.8	57.15 .26	7.5 0.8	41.33 .28	46.5 0.3
Mar. 10.8	54.68 .32	31.3 0.5	9.34 .83	18.3 1.2	57.42 .27	6.9 -0.4	41.61 .29	46.1 0.4
20.8	55.00 .33	30.8 0.5	10.20 .87	17.5 -0.5	57.70 .28	6.7 0.0	41.91 .30	45.6 0.6
30.8	55.33 .33	30.3 0.5	11.09 .89	17.3 +0.1	57.99 .29	6.9 +0.4	42.22 .31	45.0 0.7
Apr. 9.7	55.66 .33	29.8 0.5	11.97 .87	17.8 0.8	58.28 .29	7.5 0.8	42.53 .31	44.3 0.8
19.7	55.99 .32	29.3 0.5	12.82 .83	18.9 1.4	58.58 .29	8.6 1.2	42.85 .31	43.5 0.8
29.7	56.31 .31	28.7 0.5	13.62 .76	20.6 1.9	58.86 .28	9.9 1.5	43.16 .31	42.6 0.9
May 9.7	56.62 .30	28.3 0.5	14.34 .67	22.8 2.4	59.14 .27	11.6 1.8	43.46 .30	41.8 0.9
19.6	56.91 .28	27.8 0.4	14.95 .55	25.5 2.8	59.40 .25	13.6 2.0	43.75 .28	40.9 0.9
29.6	57.18 .25	27.5 0.3	15.44 .43	28.5 3.2	59.63 .22	15.7 2.2	44.02 .26	40.0 0.8
June 8.6	57.41 .22	27.2 0.2	15.80 .29	31.8 3.4	59.84 .19	17.9 2.3	44.26 .23	39.3 0.7
18.5	57.62 .18	27.1 +0.1	16.02 +.15	35.2 3.5	60.02 .16	20.2 2.3	44.47 .19	38.6 0.6
28.5	57.78 .14	27.0 0.0	16.10 .00	38.7 3.5	60.16 .12	22.5 2.2	44.65 .16	38.1 0.5
July 8.5	57.90 .10	27.1 -0.1	16.02 -1.5	42.3 3.5	60.26 .08	24.7 2.1	44.78 .11	37.6 0.4
18.5	57.97 +.05	27.2 0.2	15.80 .29	45.7 3.3	60.31 +.03	26.8 2.0	44.87 .07	37.3 0.3
28.4	58.00 .00	27.5 0.3	15.44 .43	48.9 3.1	60.32 -0.1	28.7 1.8	44.92 +.02	37.1 +0.1
Aug. 7.4	57.97 -0.5	27.8 0.3	14.95 .55	51.9 2.8	60.29 .05	30.4 1.6	44.92 -0.3	37.0 0.0
17.4	57.91 .09	28.1 0.3	14.33 .67	54.6 2.5	60.22 .09	31.9 1.4	44.87 .07	37.1 -0.1
27.4	57.80 .13	28.4 0.3	13.61 .76	56.9 2.1	60.11 .13	33.1 1.1	44.78 .11	37.1 0.1
Sept. 6.3	57.65 .16	28.7 0.3	12.81 .24	58.8 1.7	59.97 .15	34.1 0.8	44.66 .14	37.3 0.1
16.3	57.48 .18	29.0 0.2	11.94 .20	60.2 1.2	59.81 .17	34.8 0.6	44.50 .16	37.4 0.2
26.3	57.29 .19	29.2 -0.1	11.02 .23	61.1 0.7	59.63 .18	35.2 +0.3	44.33 .18	37.6 0.2
Oct. 6.2	57.10 .19	29.3 0.0	10.08 .24	61.6 +0.2	59.44 .19	35.3 0.0	44.15 .18	37.7 0.1
16.2	56.91 .18	29.2 +0.1	9.14 .23	61.5 -0.4	59.25 .18	35.1 -0.3	43.97 .17	37.8 0.1
26.2	56.74 .16	29.1 0.2	8.22 .29	60.8 0.9	59.08 .16	34.7 0.6	43.81 .16	37.9 0.1
Nov. 5.2	56.60 .13	28.9 0.2	7.36 .29	59.6 1.4	58.93 .14	33.9 0.9	43.66 .13	38.0 -0.1
15.1	56.49 .09	28.6 0.3	6.58 .73	57.9 1.9	58.81 .10	32.8 1.2	43.54 .10	38.1 0.0
25.1	56.42 -0.4	28.3 0.4	5.89 .02	55.7 2.4	58.72 .07	31.5 1.4	43.46 .06	38.1 0.0
Dec. 5.1	56.40 .00	27.9 0.4	5.33 .49	53.1 2.8	58.67 -0.3	30.0 1.7	43.43 -0.2	38.1 0.0
15.1	56.43 +.05	27.5 0.4	4.91 .34	50.1 3.1	58.67 +.01	28.2 1.8	43.43 +0.3	38.1 0.0
25.0	56.51 .10	27.2 0.4	4.64 .19	46.9 3.3	58.70 .06	26.3 1.9	43.48 .07	38.2 0.0
35.0	56.63 +.14	26.8 +0.4	4.54 -0.4	43.5 -3.5	58.78 +.10	24.3 -2.0	43.57 +.11	38.2 0.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Draconis.		γ Draconis.		δ Aquilæ.		κ Aquilæ.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h 19 ^m 12	[°] +67 ['] 26	^h 19 ^m 17	[°] +73 ['] 7	^h 19 ^m 19	[°] +2 ['] 52	^h 19 ^m 30	[°] -7 ['] 17
Jan. 0.0	28.02 ^s -0.06	73.3 ["] -3.4	45.13 ^s -15	69.0 ["] -3.3	29.63 ^s +0.06	45.1 ["] -1.3	29.15 ^s +0.07	25.3 ["] -0.7
10.0	28.00 +0.04	69.9 3.4	45.05 .00	65.6 3.4	29.72 .11	43.8 1.3	29.24 .11	26.0 0.7
20.0	28.10 .15	66.5 3.4	45.12 +1.4	62.2 3.4	29.85 .15	42.5 1.3	29.37 .14	26.7 0.6
29.9	28.30 .25	63.2 3.2	45.34 .28	58.9 3.2	30.02 .18	41.3 1.2	29.53 .18	27.3 0.5
Feb. 8.9	28.60 .34	60.1 2.9	45.69 .41	55.8 2.9	30.21 .21	40.2 1.0	29.72 .20	27.8 0.4
18.9	28.99 .43	57.4 2.5	46.16 .52	53.0 2.5	30.43 .22	39.4 0.7	29.93 .23	28.1 -0.2
28.9	29.45 .50	55.2 2.0	46.73 .62	50.7 2.0	30.67 .25	38.8 0.5	30.17 .25	28.2 0.0
Mar. 10.8	29.98 .55	53.5 1.4	47.40 .70	48.9 1.5	30.92 .27	38.5 -0.1	30.43 .27	28.2 +0.2
20.8	30.56 .59	52.4 0.7	48.13 .75	47.7 0.9	31.20 .28	38.5 +0.2	30.70 .28	27.9 0.4
30.8	31.16 .61	52.0 -0.1	48.90 .78	47.2 -0.2	31.48 .29	38.8 0.5	30.98 .29	27.3 0.6
Apr. 9.7	31.77 .61	52.2 +0.6	49.69 .78	47.3 +0.5	31.77 .29	39.5 0.8	31.28 .30	26.6 0.2
19.7	32.38 .59	53.1 1.2	50.46 .76	48.1 1.1	32.06 .29	40.4 1.1	31.58 .30	25.6 1.0
29.7	32.96 .56	54.6 1.8	51.21 .73	49.5 1.7	32.35 .29	41.7 1.3	31.87 .30	24.5 1.2
May 9.7	33.49 .51	56.7 2.3	51.90 .65	51.5 2.2	32.64 .28	43.1 1.6	32.17 .29	23.2 1.3
19.6	33.97 .45	59.2 2.7	52.51 .57	53.9 2.6	32.91 .26	44.8 1.7	32.45 .27	21.8 1.4
29.6	34.38 .37	62.1 3.1	53.03 .47	56.8 3.0	33.16 .24	46.5 1.8	32.72 .26	20.4 1.4
June 8.6	34.71 .28	65.4 3.4	53.44 .35	59.9 3.3	33.39 .21	48.4 1.8	32.96 .23	19.0 1.4
18.6	34.95 .19	68.8 3.5	53.73 .23	63.3 3.5	33.59 .18	50.2 1.8	33.18 .20	17.7 1.3
28.5	35.09 +1.0	72.4 3.6	53.90 +1.0	66.9 3.6	33.76 .15	52.0 1.8	33.36 .16	16.4 1.2
July 8.5	35.14 .00	76.0 3.6	53.94 -0.3	70.5 3.6	33.88 .10	53.7 1.7	33.50 .12	15.2 1.1
18.5	35.09 -1.0	79.5 3.5	53.85 .15	74.0 3.5	33.96 .06	55.3 1.5	33.60 .08	14.1 1.0
28.4	34.94 .20	82.9 3.3	53.63 .28	77.4 3.3	34.00 +0.2	56.7 1.4	33.66 +0.3	13.2 0.8
Aug. 7.4	34.60 .29	86.1 3.0	53.29 .40	80.7 3.1	34.00 -0.3	58.0 1.2	33.67 -0.1	12.5 0.7
17.4	34.36 .37	89.0 2.7	52.84 .50	83.7 2.8	33.95 .07	59.1 1.0	33.64 .05	11.9 0.5
27.4	33.95 .44	91.6 2.4	52.28 .60	86.3 2.4	33.87 .10	60.0 0.8	33.56 .09	11.4 0.4
Sept. 6.3	33.48 .50	93.7 1.9	51.64 .68	88.5 2.0	33.75 .13	60.7 0.6	33.45 .12	11.1 0.2
16.3	32.95 .55	95.4 1.5	50.93 .74	90.4 1.6	33.61 .15	61.2 0.4	33.32 .13	11.0 +0.1
26.3	32.38 .58	96.7 1.0	50.16 .78	91.7 1.1	33.45 .17	61.4 +0.2	33.16 .16	10.9 0.0
Oct. 6.3	31.79 .59	97.4 +0.5	49.37 .80	92.6 +0.6	33.27 .17	61.5 0.0	32.90 .17	11.0 -0.1
16.2	31.19 .59	97.6 -0.1	48.56 .80	92.9 0.0	33.10 .17	61.4 -0.2	32.62 .17	11.1 0.2
26.2	30.61 .57	97.3 0.6	47.76 .78	92.7 -0.5	32.94 .16	61.1 0.4	32.66 .16	11.4 0.3
Nov. 5.2	30.05 .53	96.3 1.2	46.99 .74	91.9 1.1	32.79 .13	60.6 0.6	32.51 .13	11.7 0.4
15.1	29.55 .48	94.9 1.7	46.28 .67	90.5 1.6	32.67 .10	59.9 0.8	32.39 .11	12.1 0.5
25.1	29.10 .41	92.9 2.2	45.65 .59	88.7 2.1	32.58 .07	59.0 1.0	32.30 .07	12.6 0.5
Dec. 5.1	28.73 .33	90.5 2.6	45.11 .46	86.4 2.5	32.53 -0.3	57.9 1.1	32.24 -0.3	13.2 0.6
15.1	28.45 .28	87.6 3.0	44.68 .36	83.6 2.9	32.52 +0.1	56.8 1.2	32.23 +0.1	13.8 0.7
25.0	28.26 .13	84.5 3.3	44.38 .23	80.5 3.2	32.55 .05	55.5 1.3	32.25 .05	14.5 0.7
35.0	28.18 -0.3	81.1 -3.6	44.22 -0.3	77.2 -3.4	32.61 +0.9	54.2 -1.4	32.32 +0.9	15.2 -0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Aquilæ.		α Aquilæ. (Altair.)		ϵ Draconis.		β Aquilæ.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 19 ^m 40	[°] +10 ['] 19	^h 19 ^m 44	[°] +8 ['] 33	^h 19 ^m 48	[°] +69 ['] 57	^h 19 ^m 49	[°] +6 ['] 6
Jan. 0.0	35.82 +.05	30.7 -1.6	58.35 +.05	21.5 -1.5	30.28 -.17	62.8 -3.2	27.82 +.04	41.1 -1.5
10.0	35.89 .09	29.1 1.7	58.42 .09	19.9 1.6	30.16 -.06	59.5 3.3	27.89 .08	39.6 1.4
20.0	35.99 .19	27.4 1.6	58.52 .19	18.4 1.5	30.16 +.05	56.1 3.4	27.99 .19	38.2 1.4
30.0	36.13 .15	25.8 1.5	58.65 .15	16.9 1.4	30.27 .17	52.8 3.3	28.12 .15	36.9 1.3
Feb. 8.9	36.30 .18	24.4 1.3	58.82 .18	15.6 1.3	30.50 .29	49.6 3.1	28.28 .18	35.7 1.1
18.9	36.50 .21	23.2 1.0	59.02 .21	14.5 1.0	30.84 .39	46.6 2.8	28.47 .20	34.7 0.9
28.9	36.72 .23	22.3 0.7	59.24 .23	13.7 0.7	31.28 .48	44.1 2.3	28.69 .23	34.0 0.6
Mar. 10.9	36.97 .25	21.8 -0.4	59.48 .25	13.2 -0.3	31.81 .56	42.0 1.8	28.93 .25	33.5 -0.3
20.8	37.23 .27	21.6 0.0	59.74 .27	13.1 +0.1	32.40 .62	40.5 1.3	29.18 .27	33.5 +0.1
30.8	37.51 .28	21.8 +0.4	60.02 .28	13.4 0.4	33.04 .66	39.6 -0.6	29.46 .28	33.8 0.4
Apr. 9.8	37.80 .29	22.4 0.8	60.31 .29	14.0 0.8	33.71 .68	39.4 +0.1	29.74 .29	34.4 0.8
19.7	38.09 .29	23.3 1.1	60.60 .30	14.9 1.1	34.39 .68	39.8 0.7	30.04 .29	35.3 1.1
29.7	38.39 .29	24.6 1.4	60.90 .29	16.2 1.4	35.06 .66	40.8 1.4	30.33 .29	36.6 1.4
May 9.7	38.68 .29	26.2 1.7	61.19 .29	17.8 1.7	35.70 .61	42.4 1.9	30.62 .29	38.1 1.6
19.7	38.96 .27	28.1 1.9	61.47 .28	19.6 1.9	36.29 .55	44.6 2.4	30.91 .28	39.8 1.8
29.6	39.22 .25	30.1 2.1	61.74 .26	21.6 2.0	36.81 .48	47.2 2.8	31.18 .26	41.7 1.9
June 8.6	39.46 .23	32.2 2.2	61.99 .23	23.7 2.1	37.25 .40	50.2 3.2	31.42 .23	43.7 2.0
18.6	39.67 .19	34.4 2.2	62.20 .20	25.9 2.1	37.59 .30	53.5 3.4	31.65 .20	45.7 2.0
28.6	39.85 .16	36.6 2.2	62.38 .16	28.0 2.1	37.84 .19	57.1 3.6	31.83 .17	47.7 2.0
July 8.5	39.99 .12	38.7 2.1	62.53 .12	30.1 2.0	37.98 +.06	60.7 3.6	31.98 .13	49.7 1.9
18.5	40.09 .06	40.8 2.0	62.63 .06	32.0 1.9	38.01 -.03	64.3 3.6	32.09 .09	51.5 1.8
28.5	40.14 +.03	42.7 1.8	62.69 +.04	33.8 1.7	37.93 .14	67.9 3.5	32.16 +.04	53.2 1.6
Aug. 7.4	40.15 -.01	44.4 1.6	62.71 -.01	35.5 1.5	37.74 .24	71.4 3.3	32.18 .00	54.7 1.4
17.4	40.11 .05	45.9 1.4	62.68 .05	36.9 1.3	37.45 .34	74.6 3.1	32.15 -.04	56.0 1.2
27.4	40.04 .09	47.2 1.2	62.61 .09	38.1 1.1	37.06 .43	77.5 2.8	32.09 .08	57.1 1.0
Sept. 6.4	39.93 .13	48.2 0.9	62.51 .13	39.1 0.9	36.59 .51	80.2 2.4	31.99 .12	58.0 0.8
16.3	39.79 .15	49.0 0.7	62.37 .15	39.9 0.6	36.05 .57	82.4 2.0	31.86 .14	58.6 0.5
26.3	39.63 .17	49.5 0.4	62.22 .16	40.4 0.4	35.46 .62	84.1 1.5	31.70 .16	59.0 0.3
Oct. 6.3	39.46 .18	49.7 +0.1	62.05 .17	40.6 +0.1	34.82 .65	85.4 1.0	31.54 .17	59.2 +0.1
16.3	39.28 .17	49.7 -0.1	61.87 .17	40.6 -0.1	34.17 .66	86.2 +0.5	31.37 .17	59.2 -0.1
26.2	39.11 .17	49.4 0.4	61.70 .16	40.4 0.4	33.51 .68	86.4 -0.1	31.20 .16	58.9 0.4
Nov. 5.2	38.95 .15	48.9 0.7	61.55 .15	39.9 0.6	32.86 .69	86.0 0.6	31.04 .15	58.4 0.6
15.2	38.81 .12	48.1 0.9	61.41 .12	39.1 0.8	32.25 .59	85.1 1.2	30.91 .12	57.7 0.8
25.2	38.71 .09	47.1 1.1	61.31 .09	38.2 1.1	31.69 .53	83.7 1.7	30.80 .09	56.8 1.0
Dec. 5.1	38.63 .05	45.8 1.3	61.24 .05	37.0 1.2	31.21 .45	81.7 2.2	30.73 .06	55.7 1.2
15.1	38.60 -.02	44.4 1.5	61.20 -.02	35.7 1.4	30.81 .36	79.2 2.7	30.69 -.02	54.5 1.3
25.1	38.60 +.02	42.8 1.6	61.20 +.02	34.2 1.5	30.50 .25	76.4 3.0	30.69 +.02	53.2 1.4
35.0	38.64 +.06	41.2 -1.7	61.24 +.06	32.7 -1.6	30.31 -.14	73.2 -3.3	30.73 +.06	51.7 -1.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	τ Aquilæ.		α^* Capricorni.		κ Cephei.		α Pavonis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h 19 ^m 58	[°] +6 ['] 56	^h 20 ^m 11	[°] -12 ['] 54	^h 20 ^m 12	[°] +77 ['] 20	^h 20 ^m 16	[°] -57 ['] 6
Jan. 0.1	19.39 +.04	38.7 -1.4	26.98 +.04	43.8 -0.3	46.00 -.44	80.9 -2.9	13.26 +.01	56.5 +2.2
10.0	19.44 .07	37.2 1.4	27.03 .07	44.1 0.9	45.65 .27	77.8 3.2	13.31 .08	53.2 2.4
20.0	19.53 .11	35.8 1.4	27.12 .11	44.3 0.2	45.47 -.08	74.5 3.3	13.43 .15	50.8 2.5
30.0	19.65 .14	34.4 1.3	27.25 .14	44.4 -0.1	45.49 +.13	71.2 3.3	13.61 .21	48.3 2.5
Feb. 9.0	19.81 .17	33.2 1.1	27.40 .17	44.4 +0.1	45.70 .30	68.0 3.2	13.85 .27	45.8 2.5
18.9	19.90 .20	32.2 0.9	27.59 .20	44.3 0.2	46.09 .48	64.9 2.9	14.15 .32	43.3 2.4
28.9	20.20 .22	31.5 0.6	27.80 .22	44.0 0.4	46.65 .64	62.1 2.5	14.40 .37	41.0 2.3
Mar. 10.9	20.43 .24	31.1 -0.3	28.03 .25	43.6 0.5	47.36 .78	59.8 2.1	14.88 .41	38.8 2.1
20.8	20.60 .26	31.0 +0.1	28.29 .27	43.0 0.7	48.20 .89	57.9 1.6	15.31 .44	36.8 1.9
30.8	20.96 .28	31.2 0.4	28.56 .28	42.2 0.9	49.13 .97	56.7 0.9	15.77 .47	35.0 1.7
Apr. 9.8	21.24 .29	31.8 0.8	28.85 .30	41.2 1.1	50.13 1.01	56.1 -0.3	16.26 .49	33.5 1.4
19.8	21.53 .30	32.8 1.1	29.15 .30	40.0 1.2	51.15 1.03	56.1 +0.3	16.76 .51	32.2 1.1
29.7	21.83 .30	34.1 1.4	29.46 .31	38.8 1.3	52.17 1.01	56.7 0.9	17.28 .51	31.2 0.8
May 9.7	22.12 .29	35.6 1.6	29.77 .31	37.5 1.4	53.16 .96	57.9 1.5	17.79 .51	30.6 0.5
19.7	22.41 .28	37.4 1.9	30.07 .30	36.1 1.4	54.07 .87	59.8 2.1	18.29 .49	30.3 +0.1
29.7	22.69 .26	39.3 2.0	30.36 .28	34.7 1.4	54.90 .77	62.1 2.5	18.77 .47	30.4 -0.2
June 8.6	22.94 .24	41.3 2.1	30.64 .26	33.4 1.3	55.61 .64	64.8 2.9	19.22 .43	30.8 0.6
18.6	23.17 .21	43.4 2.1	30.89 .24	32.1 1.2	56.18 .50	67.9 3.2	19.63 .38	31.5 0.9
28.6	23.36 .18	45.5 2.0	31.11 .20	31.0 1.1	56.60 .34	71.3 3.5	19.99 .33	32.6 1.2
July 8.5	23.52 .14	47.5 2.0	31.20 .16	30.0 0.9	56.86 .18	74.8 3.6	20.29 .26	33.9 1.5
18.5	23.63 .09	49.4 1.8	31.44 .12	29.1 0.9	56.95 +.01	78.4 3.6	20.51 .19	35.5 1.7
28.5	23.71 .05	51.2 1.7	31.53 .07	28.5 0.8	56.87 -.16	82.1 3.6	20.67 .11	37.3 1.9
Aug. 7.5	23.73 +.01	52.8 1.5	31.58 +.03	28.0 0.4	56.63 .32	85.6 3.5	20.74 +.03	39.2 1.9
17.4	23.72 -.04	54.2 1.3	31.50 -.02	27.6 0.3	56.23 .48	89.0 3.3	20.73 -.05	41.2 1.9
27.4	23.66 .08	55.3 1.1	31.55 .06	27.5 +0.1	55.68 .62	92.2 3.1	20.65 .19	43.1 1.9
Sept. 6.4	23.57 .11	56.3 0.8	31.47 .10	27.4 0.0	54.99 .75	95.1 2.7	20.49 .19	45.0 1.7
16.4	23.44 .14	57.0 0.6	31.36 .13	27.5 -0.1	54.19 .85	97.7 2.4	20.27 .24	46.6 1.5
26.3	23.29 .16	57.5 0.4	31.22 .15	27.6 0.2	53.20 .94	99.9 1.9	20.00 .29	48.0 1.2
Oct. 6.3	23.13 .17	57.7 +0.1	31.06 .16	27.8 0.2	52.31 1.01	101.6 1.5	19.69 .32	49.1 0.9
16.3	22.96 .17	57.7 -0.1	30.90 .17	28.1 0.3	51.29 1.05	102.8 1.0	19.36 .33	49.8 0.5
26.2	22.79 .16	57.5 0.3	30.73 .16	28.4 0.3	50.23 1.06	103.5 +0.4	19.03 .33	50.1 -0.1
Nov. 5.2	22.63 .15	57.0 0.6	30.58 .15	28.7 0.3	49.18 1.04	103.6 -0.2	18.71 .31	50.0 +0.3
15.2	22.49 .12	56.4 0.8	30.44 .13	29.0 0.3	48.16 .99	103.2 0.7	18.42 .27	49.4 0.8
25.2	22.38 .10	55.5 1.0	30.33 .10	29.4 0.4	47.20 .92	102.1 1.3	18.17 .22	48.4 1.2
Dec. 5.1	22.30 .06	54.4 1.1	30.25 .06	29.8 0.3	46.32 .82	100.6 1.8	17.97 .17	47.1 1.5
15.1	22.26 -.03	53.2 1.3	30.20 -.03	30.1 0.3	45.56 .69	98.5 2.3	17.84 .10	45.4 1.8
25.1	22.25 +.01	51.9 1.4	30.19 +.01	30.4 0.3	44.94 .55	95.9 2.7	17.77 -.03	43.4 2.1
35.1	22.27 +.05	50.4 -1.5	30.22 +.04	30.7 -0.3	44.48 -.38	93.0 -3.0	17.77 +.03	41.2 +2.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Cygni.		π Capricorni.		ϵ Delphini.		Groombridge 3241.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 20 ^m 17	+39° 52'	^h 20 ^m 20	-18° 35'	^h 20 ^m 27	+10° 53'	^h 20 ^m 30	+72° 7'
Jan. 0.1	56.74 -.04	44.0 -2.6	30.46 +.03	61.9 +0.1	31.48 .00	64.5 -1.5	26.75 -.33	56.1 -2.8
10.0	56.73 +.01	41.3 2.8	30.51 .07	61.8 0.1	31.50 +.04	63.0 1.6	26.49 .21	53.1 3.1
20.0	56.76 .06	38.5 2.8	30.59 .10	61.7 0.2	31.56 .07	61.4 1.5	26.35 -.06	49.8 3.3
30.0	56.84 .10	35.6 2.8	30.71 .14	61.4 0.3	31.65 .11	59.9 1.4	26.34 +.06	46.5 3.3
Feb. 9.0	56.97 .15	32.9 2.6	30.86 .17	61.1 0.4	31.77 .14	58.5 1.3	26.46 .19	43.2 3.2
18.9	57.14 .19	30.5 2.3	31.05 .20	60.6 0.5	31.93 .17	57.3 1.1	26.71 .32	40.1 3.0
28.9	57.36 .23	28.3 2.0	31.26 .23	60.0 0.7	32.12 .20	56.4 0.8	27.09 .43	37.2 2.7
Mar. 10.9	57.61 .27	26.6 1.5	31.49 .25	59.3 0.8	32.33 .22	55.8 0.4	27.57 .53	34.8 2.2
20.9	57.89 .30	25.4 1.0	31.75 .27	58.4 0.9	32.56 .25	55.6 -0.1	28.15 .62	32.8 1.7
30.8	58.20 .33	24.8 -0.4	32.02 .29	57.4 1.1	32.82 .27	55.7 +0.3	28.81 .69	31.4 1.1
Apr. 9.8	58.53 .34	24.7 +0.2	32.32 .30	56.3 1.2	33.10 .28	56.2 0.7	29.53 .73	30.0 -0.5
19.8	58.88 .35	25.3 0.7	32.62 .31	55.1 1.2	33.39 .29	57.1 1.1	30.27 .75	30.5 +0.2
29.7	59.23 .35	26.2 1.3	32.94 .32	53.8 1.3	33.68 .30	58.3 1.4	31.03 .75	31.0 0.8
May 9.7	59.58 .35	27.8 1.8	33.26 .33	52.5 1.3	33.99 .30	59.8 1.7	31.77 .73	32.1 1.4
19.7	59.92 .33	29.8 2.2	33.57 .31	51.2 1.3	34.29 .29	61.6 1.9	32.48 .68	33.8 1.9
29.7	60.24 .31	32.2 2.6	33.88 .30	49.9 1.2	34.57 .28	63.7 2.1	33.13 .62	36.0 2.4
June 8.6	60.53 .28	35.0 2.9	34.16 .28	48.7 1.1	34.84 .26	65.8 2.2	33.70 .53	38.6 2.8
18.6	60.79 .24	38.0 3.1	34.43 .25	47.7 1.0	35.09 .23	68.1 2.3	34.19 .44	41.7 3.2
28.6	61.01 .20	41.2 3.2	34.66 .22	46.8 0.8	35.30 .20	70.4 2.3	34.57 .33	45.0 3.4
July 8.6	61.18 .15	44.4 3.3	34.86 .18	46.1 0.6	35.49 .16	72.6 2.2	34.84 .21	48.5 3.6
18.5	61.30 .10	47.7 3.3	35.01 .13	45.6 0.5	35.63 .12	74.8 2.1	35.00 +.09	52.1 3.7
28.5	61.36 +.04	50.9 3.2	35.12 .09	45.2 0.3	35.72 .08	76.8 2.0	35.03 -.03	55.8 3.7
Aug. 7.5	61.38 -.01	54.0 3.0	35.19 +.04	45.0 +0.1	35.78 +.03	78.7 1.8	34.94 .15	59.5 3.6
17.4	61.33 .06	56.9 2.8	35.20 -.01	45.0 0.0	35.78 -.01	80.4 1.6	34.73 .26	63.0 3.4
27.4	61.24 .11	59.5 2.5	35.17 .05	45.1 -0.2	35.75 .05	81.8 1.3	34.42 .37	66.3 3.2
Sept. 6.4	61.11 .15	61.8 2.2	35.10 .09	45.4 0.3	35.68 .09	83.0 1.1	34.00 .47	69.4 2.9
16.4	60.93 .19	63.8 1.8	34.90 .12	45.7 0.3	35.57 .12	84.0 0.8	33.49 .55	72.1 2.5
26.3	60.73 .22	65.3 1.4	34.85 .15	46.0 0.4	35.43 .15	84.7 0.6	32.90 .62	74.5 2.1
Oct. 6.3	60.50 .23	66.5 1.0	34.69 .16	46.4 0.4	35.28 .16	85.1 +0.3	32.25 .67	76.4 1.7
16.3	60.26 .24	67.2 +0.5	34.52 .17	46.8 0.4	35.11 .17	85.3 0.0	31.56 .71	77.8 1.1
26.2	60.01 .24	67.4 0.0	34.35 .17	47.2 0.3	34.94 .17	85.2 -0.2	30.84 .72	78.6 +0.6
Nov. 5.2	59.77 .23	67.2 -0.5	34.19 .15	47.5 0.3	34.78 .15	84.8 0.5	30.12 .71	78.9 0.0
15.2	59.55 .21	66.4 0.9	34.05 .13	47.7 0.2	34.63 .14	84.2 0.7	29.42 .69	78.7 -0.0
25.2	59.36 .18	65.3 1.4	33.93 .10	47.9 0.2	34.51 .11	83.4 1.0	28.75 .64	77.9 1.1
Dec. 5.1	59.19 .15	63.6 1.8	33.84 .07	48.1 0.1	34.41 .08	82.3 1.2	28.14 .58	76.5 1.7
15.1	59.06 .11	61.6 2.2	33.79 -.04	48.2 -0.1	34.34 .05	81.0 1.3	27.60 .50	74.5 2.2
25.1	58.97 .07	59.2 2.5	33.77 .00	48.2 0.0	34.30 -.02	79.6 1.5	27.15 .40	72.1 2.6
35.1	58.93 -.02	55.6 -2.7	33.79 +.04	48.2 +0.1	34.30 +.02	78.1 -1.5	26.81 -.29	69.3 -3.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Cygni.		μ Aquarii.		γ Cygni.		12 Year Cat. 1879.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 20 ^m 37	[°] +44 ['] 51	^h 20 ^m 46	[°] -9 ['] 25	^h 20 ^m 52	[°] +40 ['] 42	^h 20 ^m 52	[°] +80 ['] 6
Jan. 0.1	21.64 ^s -07	31.5 ["] -2.6	14.00 ^s +01	42.0 ["] -0.4	43.56 ^s -07	46.1 ["] -2.4	49.26 ^s -77	35.0 ["] -2.5
10.1	21.59 ^s -02	28.7 ["] 2.8	14.08 ^s .04	42.4 ["] 0.4	43.51 ^s -03	43.6 ["] 2.6	48.59 ^s .56	32.3 ["] 2.9
20.0	21.59 ^s +03	25.8 ["] 2.9	14.14 ^s .07	42.7 ["] 0.3	43.50 ^s +02	40.9 ["] 2.7	48.14 ^s .34	29.2 ["] 3.1
30.0	21.65 ^s .08	22.9 ["] 2.9	14.22 ^s .10	43.0 ["] 0.2	43.54 ^s .06	38.1 ["] 2.7	47.93 ^s -10	26.0 ["] 3.2
Feb. 9.0	21.75 ^s .13	20.1 ["] 2.8	14.34 ^s .13	43.1 ["] -0.1	43.63 ^s .11	35.4 ["] 2.6	47.95 ^s +15	22.8 ["] 3.2
19.0	21.90 ^s .18	17.4 ["] 2.5	14.49 ^s .16	43.1 ["] +0.1	43.76 ^s .15	32.9 ["] 2.4	48.22 ^s .39	19.6 ["] 3.1
28.9	22.10 ^s .22	15.0 ["] 2.2	14.66 ^s .19	42.9 ["] 0.3	43.93 ^s .20	30.6 ["] 2.1	48.73 ^s .61	16.6 ["] 2.8
Mar. 10.9	22.34 ^s .26	13.1 ["] 1.7	14.87 ^s .22	42.5 ["] 0.5	44.15 ^s .24	28.7 ["] 1.7	49.44 ^s .81	13.9 ["] 2.5
20.9	22.63 ^s .30	11.6 ["] 1.2	15.09 ^s .24	41.9 ["] 0.7	44.41 ^s .27	27.3 ["] 1.2	50.35 ^s .99	11.6 ["] 2.0
30.8	22.95 ^s .33	10.7 ["] 0.7	15.35 ^s .26	41.1 ["] 0.9	44.70 ^s .31	26.3 ["] 0.7	51.42 ^s 1.13	9.9 ["] 1.5
Apr. 9.8	23.29 ^s .35	10.3 ["] -0.1	15.62 ^s .28	40.1 ["] 1.1	45.02 ^s .33	25.9 ["] -0.1	52.60 ^s 1.23	8.7 ["] 0.2
19.8	23.65 ^s .37	10.5 ["] +0.5	15.90 ^s .29	38.9 ["] 1.3	45.36 ^s .35	26.1 ["] +0.5	53.86 ^s 1.28	8.1 ["] -0.3
29.8	24.03 ^s .38	11.3 ["] 1.1	16.20 ^s .30	37.5 ["] 1.4	45.71 ^s .36	26.8 ["] 1.0	55.15 ^s 1.29	8.2 ["] +0.4
May 9.7	24.40 ^s .37	12.7 ["] 1.6	16.51 ^s .31	36.0 ["] 1.5	46.07 ^s .36	28.1 ["] 1.5	56.43 ^s 1.26	8.9 ["] 1.0
19.7	24.77 ^s .36	14.6 ["] 2.1	16.82 ^s .31	34.4 ["] 1.6	46.43 ^s .35	29.9 ["] 2.0	57.66 ^s 1.20	10.2 ["] 1.6
29.7	25.12 ^s .34	16.9 ["] 2.5	17.12 ^s .30	32.8 ["] 1.6	46.77 ^s .33	32.1 ["] 2.4	58.81 ^s 1.09	12.0 ["] 2.1
June 8.6	25.44 ^s .31	19.6 ["] 2.8	17.41 ^s .28	31.2 ["] 1.6	47.09 ^s .31	34.6 ["] 2.7	59.84 ^s .96	14.3 ["] 2.5
18.6	25.73 ^s .27	22.6 ["] 3.1	17.68 ^s .26	29.6 ["] 1.5	47.39 ^s .28	37.5 ["] 3.0	60.72 ^s .80	17.1 ["] 2.2
28.6	25.98 ^s .22	25.8 ["] 3.3	17.92 ^s .23	28.2 ["] 1.4	47.65 ^s .23	40.6 ["] 3.2	61.43 ^s .62	20.2 ["] 3.2
July 8.6	26.18 ^s .17	29.1 ["] 3.4	18.13 ^s .19	26.9 ["] 1.2	47.86 ^s .19	43.9 ["] 3.3	61.95 ^s .42	23.5 ["] 3.5
18.5	26.32 ^s .12	32.5 ["] 3.4	18.30 ^s .15	25.8 ["] 1.0	48.02 ^s .14	47.2 ["] 3.3	62.26 ^s .21	27.1 ["] 3.6
28.5	26.41 ^s +06	35.9 ["] 3.3	18.43 ^s .10	24.8 ["] 0.9	48.13 ^s .08	50.4 ["] 3.2	62.37 ^s +01	30.7 ["] 3.7
Aug. 7.5	26.44 ^s .00	39.2 ["] 3.2	18.51 ^s .08	24.0 ["] 0.7	48.19 ^s +03	53.6 ["] 3.1	62.27 ^s -20	34.4 ["] 3.7
17.5	26.41 ^s -05	42.3 ["] 3.0	18.55 ^s +01	23.5 ["] 0.5	48.19 ^s -02	56.7 ["] 2.9	61.97 ^s .40	38.0 ["] 3.6
27.4	26.33 ^s .11	45.2 ["] 2.7	18.54 ^s -03	23.1 ["] 0.3	48.14 ^s .06	59.5 ["] 2.7	61.47 ^s .50	41.5 ["] 3.4
Sept. 6.4	26.20 ^s .15	47.8 ["] 2.4	18.49 ^s .07	22.9 ["] +0.1	48.04 ^s .12	62.1 ["] 2.4	60.70 ^s .77	44.8 ["] 3.2
16.4	26.02 ^s .19	50.1 ["] 2.1	18.40 ^s .10	22.8 ["] 0.0	47.90 ^s .16	64.3 ["] 2.1	59.94 ^s .93	47.9 ["] 2.9
26.3	25.81 ^s .22	51.9 ["] 1.7	18.28 ^s .13	22.9 ["] -0.1	47.72 ^s .19	66.2 ["] 1.7	58.94 ^s 1.06	50.6 ["] 2.5
Oct. 6.3	25.58 ^s .25	53.4 ["] 1.2	18.14 ^s .15	23.1 ["] 0.2	47.51 ^s .22	67.7 ["] 1.3	57.82 ^s 1.17	52.8 ["] 2.1
16.3	25.32 ^s .26	54.4 ["] 0.8	17.99 ^s .16	23.3 ["] 0.3	47.29 ^s .23	68.8 ["] 0.8	56.60 ^s 1.26	54.7 ["] 1.6
26.3	25.05 ^s .26	54.9 ["] +0.3	17.83 ^s .16	23.7 ["] 0.4	47.06 ^s .24	69.4 ["] +0.4	55.32 ^s 1.31	56.0 ["] 1.1
Nov. 5.2	24.79 ^s .26	55.0 ["] -0.2	17.68 ^s .15	24.1 ["] 0.4	46.82 ^s .23	69.5 ["] -0.1	54.00 ^s 1.33	56.8 ["] +0.5
15.2	24.54 ^s .24	54.5 ["] 0.7	17.54 ^s .13	24.5 ["] 0.5	46.59 ^s .22	69.2 ["] 0.6	52.68 ^s 1.31	57.0 ["] -0.1
25.2	24.31 ^s .22	53.5 ["] 1.2	17.42 ^s .11	25.0 ["] 0.5	46.38 ^s .20	68.3 ["] 1.1	51.39 ^s 1.26	56.6 ["] 0.7
Dec. 5.2	24.11 ^s .18	52.0 ["] 1.7	17.32 ^s .08	25.5 ["] 0.5	46.20 ^s .17	67.0 ["] 1.5	50.18 ^s 1.17	55.7 ["] 1.2
15.1	23.94 ^s .15	50.1 ["] 2.1	17.25 ^s .05	25.9 ["] 0.5	46.04 ^s .14	65.3 ["] 1.9	49.07 ^s 1.04	54.2 ["] 1.8
25.1	23.82 ^s .10	47.8 ["] 2.4	17.21 ^s -0.3	26.4 ["] 0.5	45.92 ^s .10	63.2 ["] 2.3	48.10 ^s .88	52.1 ["] 2.3
35.1	23.74 ^s -06	45.2 ["] -2.8	17.20 ^s +01	26.9 ["] -0.4	45.84 ^s -06	60.8 ["] -2.5	47.31 ^s -06	49.6 ["] -2.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	61 ¹ Cygni.			ζ Cygni.			α Cephei.			1 Pegasi.		
	Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.	
	^h 21	^m 1	^s +98° 9'	^h 21	^m 7	^s +29° 44'	^h 21	^m 15	^s +62° 4'	^h 21	^m 16	^s +19° 17'
Jan. 0.1	33.28	−.06	65.3 −2.2	51.99	−.06	32.4 −2.0	42.07	−.24	70.6 −2.4	34.87	−.04	54.5 −1.6
10.1	33.23	−.02	63.0 2.4	51.95	−.02	30.3 2.2	42.47	.17	68.0 2.8	34.84	−.01	52.8 1.8
20.0	33.23	+.02	60.5 2.5	51.95	+.02	28.0 2.3	42.33	.09	65.1 3.0	34.84	+.02	51.0 1.8
30.0	33.27	.06	58.0 2.5	51.98	.05	25.7 2.3	42.28	−.02	61.9 2.2	34.88	.05	49.2 1.8
Feb. 9.0	33.36	.11	55.4 2.4	52.05	.09	23.4 2.2	42.30	+.07	58.8 2.2	34.95	.09	47.4 1.7
19.0	33.49	.15	53.1 2.2	52.16	.13	21.3 2.0	42.41	.15	55.6 2.0	35.06	.12	45.8 1.5
28.9	33.66	.19	51.0 1.9	52.31	.17	19.4 1.7	42.60	.23	52.7 2.8	35.20	.16	44.5 1.2
Mar. 10.9	33.87	.23	49.2 1.5	52.50	.21	17.9 1.3	42.86	.30	50.1 2.4	35.37	.19	43.4 0.9
20.9	34.12	.27	47.9 1.1	52.72	.24	16.8 0.9	43.20	.37	47.9 2.0	35.57	.22	42.7 0.5
30.9	34.41	.30	47.1 −0.6	52.98	.27	16.1 −0.4	43.60	.43	46.2 1.4	35.80	.25	42.4 −0.1
Apr. 9.8	34.72	.33	46.8 0.0	53.26	.29	15.9 +0.1	44.06	.47	45.0 0.8	36.06	.27	42.5 +0.3
19.8	35.06	.35	47.0 +0.5	53.56	.31	16.3 0.6	44.55	.51	44.5 −0.2	36.34	.29	43.1 0.8
29.8	35.42	.36	47.8 1.1	53.88	.32	17.1 1.1	45.07	.53	44.6 +0.4	36.64	.31	44.1 1.2
May 9.7	35.78	.36	49.1 1.6	54.20	.33	18.4 1.5	45.60	.53	45.3 1.0	36.95	.31	45.5 1.5
19.7	36.14	.36	50.9 2.0	54.53	.33	20.1 1.9	46.13	.52	46.6 1.6	37.27	.31	47.2 1.9
29.7	36.49	.34	53.1 2.4	54.85	.31	22.2 2.3	46.64	.49	48.5 2.1	37.58	.31	49.2 2.1
June 8.7	36.82	.32	55.7 2.7	55.16	.30	24.6 2.5	47.12	.45	50.8 2.6	37.88	.29	51.5 2.3
18.6	37.12	.29	58.6 3.0	55.45	.27	27.2 2.7	47.55	.40	53.6 2.9	38.16	.27	53.9 2.5
28.6	37.39	.25	61.7 3.2	55.70	.24	30.1 2.9	47.92	.34	56.7 3.2	38.41	.24	56.5 2.6
July 8.6	37.62	.21	65.0 3.3	55.92	.20	33.0 3.0	48.23	.27	60.0 3.5	38.63	.20	59.1 2.6
18.6	37.80	.16	68.3 3.3	56.10	.15	36.0 2.9	48.46	.20	63.6 3.6	38.82	.16	61.7 2.5
28.5	37.93	.11	71.0 3.3	56.23	.11	38.9 2.9	48.62	.12	67.3 3.7	38.96	.12	64.2 2.5
Aug. 7.5	38.01	+.05	74.8 3.2	56.31	.06	41.7 2.8	48.70	+.03	71.0 3.7	39.06	.07	66.6 2.3
17.5	38.04	.00	77.9 3.0	56.34	+.01	44.4 2.6	48.69	−.05	74.6 3.6	39.11	+.03	68.8 2.1
27.4	38.02	−.05	80.8 2.7	56.33	−.04	46.9 2.3	48.60	.12	78.1 3.4	39.12	−.02	70.8 1.9
Sept. 6.4	37.04	.09	83.4 2.5	56.27	.08	49.1 2.1	48.44	.19	81.4 3.1	39.08	.06	72.5 1.6
16.4	37.83	.13	85.7 2.1	56.17	.12	51.0 1.8	48.21	.26	84.4 2.8	39.00	.09	74.0 1.4
26.4	37.68	.16	87.6 1.8	56.04	.15	52.6 1.4	47.93	.31	87.1 2.5	38.90	.12	75.3 1.1
Oct. 6.3	37.50	.19	89.2 1.4	55.88	.17	53.9 1.1	47.59	.26	89.4 2.1	38.76	.14	76.2 0.8
16.3	37.30	.21	90.4 0.9	55.71	.18	54.8 0.7	47.21	.29	91.2 1.6	38.61	.16	76.8 0.5
26.3	37.09	.21	91.1 +0.5	55.52	.19	55.3 +0.3	46.81	.41	92.5 1.1	38.45	.16	77.1 +0.1
Nov. 5.3	36.88	.21	91.4 0.0	55.33	.19	55.3 −0.1	46.30	.42	93.3 +0.5	38.28	.16	77.1 −0.2
15.2	36.67	.20	91.2 −0.4	55.14	.18	55.0 0.5	45.97	.41	93.6 0.0	38.12	.15	76.7 0.5
25.2	36.48	.18	90.5 0.9	54.97	.16	54.3 0.9	45.56	.40	93.2 −0.6	37.98	.14	76.1 0.8
Dec. 5.2	36.31	.16	89.4 1.3	54.82	.14	53.2 1.3	45.18	.37	92.3 1.2	37.85	.12	75.1 1.1
15.1	36.17	.12	87.9 1.7	54.70	.11	51.7 1.6	44.83	.33	90.9 1.7	37.74	.09	73.8 1.4
25.1	36.07	.09	86.0 2.0	54.60	.08	49.9 1.9	44.52	.27	88.9 2.1	37.66	.07	72.4 1.6
35.1	36.00	−.05	83.8 −2.3	54.54	−.04	47.9 −2.1	44.28	−.21	86.5 −2.6	37.61	−.03	70.7 −1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Aquarii.		β Cephei.		ξ Aquarii.		ϵ Pegasi.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h ₂₁ ^m ₂₅	[°] ₋₆ ['] ₅	^h ₂₁ ^m ₂₇	[°] ₊₇₀ ['] ₂	^h ₂₁ ^m ₃₁	[°] ₋₈ ['] ₂₂	^h ₂₁ ^m ₃₈	[°] ₊₉ ['] ₁₉
Jan. 0.1	17.73 ^s _{-.03}	35.0 ^s _{-0.6}	4.61 ^s _{-.39}	36.8 ^s _{-2.3}	25.13 ^s _{-.03}	71.0 ^s _{-0.4}	20.58 ^s _{-.05}	55.3 ^s _{-1.2}
10.1	17.72 ^s _{.00}	35.6 ^s _{0.5}	4.26 ^s _{.30}	34.3 ^s _{2.7}	25.11 ^s _{.00}	71.4 ^s _{0.4}	20.55 ^s _{-.02}	54.1 ^s _{1.3}
20.1	17.73 ^s _{+.03}	36.1 ^s _{0.4}	4.01 ^s _{.30}	31.4 ^s _{3.0}	25.12 ^s _{+.03}	71.8 ^s _{0.3}	20.54 ^s _{+.01}	52.8 ^s _{1.2}
30.0	17.78 ^s _{.06}	36.5 ^s _{0.3}	3.86 ^s _{-.09}	28.3 ^s _{3.2}	25.16 ^s _{.06}	72.0 ^s _{-0.2}	20.56 ^s _{.04}	51.6 ^s _{1.2}
Feb. 9.0	17.85 ^s _{.09}	36.8 ^s _{-0.2}	3.83 ^s _{+.03}	25.1 ^s _{3.2}	25.23 ^s _{.09}	72.1 ^s _{0.0}	20.62 ^s _{.07}	50.4 ^s _{1.1}
19.0	17.96 ^s _{.12}	36.9 ^s _{0.0}	3.91 ^s _{.14}	21.9 ^s _{3.1}	25.33 ^s _{.12}	72.1 ^s _{+.01}	20.70 ^s _{.10}	49.4 ^s _{0.9}
28.9	18.10 ^s _{.15}	36.8 ^s _{+.02}	4.11 ^s _{.06}	18.8 ^s _{3.0}	25.46 ^s _{.15}	71.9 ^s _{0.3}	20.82 ^s _{.13}	48.6 ^s _{0.7}
Mar. 10.9	18.26 ^s _{.18}	36.5 ^s _{0.4}	4.43 ^s _{.06}	16.0 ^s _{2.6}	25.62 ^s _{.18}	71.4 ^s _{0.6}	20.97 ^s _{.17}	48.1 ^s _{-0.4}
20.9	18.46 ^s _{.21}	35.9 ^s _{0.7}	4.84 ^s _{.46}	13.6 ^s _{2.2}	25.81 ^s _{.21}	70.8 ^s _{0.8}	21.15 ^s _{.20}	47.8 ^s _{0.6}
30.9	18.68 ^s _{.23}	35.2 ^s _{0.9}	5.35 ^s _{.55}	11.6 ^s _{1.7}	26.03 ^s _{.23}	69.9 ^s _{1.0}	21.36 ^s _{.23}	47.9 ^s _{+.02}
Apr. 9.8	18.92 ^s _{.26}	34.2 ^s _{1.1}	5.93 ^s _{.61}	10.2 ^s _{1.1}	26.28 ^s _{.26}	68.7 ^s _{1.2}	21.60 ^s _{.25}	48.3 ^s _{0.6}
19.8	19.19 ^s _{.28}	32.9 ^s _{1.3}	6.57 ^s _{.66}	9.3 ^s _{-0.5}	26.55 ^s _{.28}	67.4 ^s _{1.4}	21.87 ^s _{.27}	49.1 ^s _{1.0}
29.8	19.48 ^s _{.29}	31.5 ^s _{1.5}	7.25 ^s _{.69}	9.1 ^s _{+.01}	26.83 ^s _{.29}	65.9 ^s _{1.6}	22.15 ^s _{.29}	50.3 ^s _{1.3}
May 9.8	19.78 ^s _{.31}	29.9 ^s _{1.7}	7.95 ^s _{.70}	9.5 ^s _{0.7}	27.13 ^s _{.31}	64.3 ^s _{1.7}	22.45 ^s _{.30}	51.7 ^s _{1.6}
19.7	20.09 ^s _{.31}	28.1 ^s _{1.8}	8.65 ^s _{.68}	10.6 ^s _{1.3}	27.44 ^s _{.31}	62.6 ^s _{1.8}	22.76 ^s _{.31}	53.4 ^s _{1.8}
29.7	20.40 ^s _{.30}	26.3 ^s _{1.8}	9.32 ^s _{.65}	12.2 ^s _{1.9}	27.75 ^s _{.31}	60.8 ^s _{1.8}	23.07 ^s _{.31}	55.3 ^s _{2.0}
June 8.7	20.70 ^s _{.29}	24.5 ^s _{1.8}	9.95 ^s _{.60}	14.3 ^s _{2.4}	28.06 ^s _{.30}	59.0 ^s _{1.7}	23.37 ^s _{.29}	57.4 ^s _{2.1}
18.6	20.99 ^s _{.28}	22.7 ^s _{1.7}	10.51 ^s _{.53}	16.9 ^s _{2.8}	28.35 ^s _{.28}	57.3 ^s _{1.7}	23.66 ^s _{.28}	59.6 ^s _{2.2}
28.6	21.25 ^s _{.25}	21.0 ^s _{1.6}	11.01 ^s _{.45}	19.8 ^s _{3.1}	28.62 ^s _{.26}	55.7 ^s _{1.6}	23.92 ^s _{.25}	61.9 ^s _{2.2}
July 8.6	21.49 ^s _{.29}	19.5 ^s _{1.5}	11.42 ^s _{.36}	23.1 ^s _{3.4}	28.86 ^s _{.22}	54.2 ^s _{1.4}	24.16 ^s _{.22}	64.1 ^s _{2.2}
18.6	21.69 ^s _{.18}	18.0 ^s _{1.3}	11.73 ^s _{.26}	26.7 ^s _{3.6}	29.07 ^s _{.19}	52.9 ^s _{1.2}	24.36 ^s _{.18}	66.3 ^s _{2.1}
28.5	21.85 ^s _{.14}	16.8 ^s _{1.1}	11.93 ^s _{.15}	30.3 ^s _{3.7}	29.24 ^s _{.15}	51.7 ^s _{1.0}	24.53 ^s _{.14}	68.4 ^s _{2.0}
Aug. 7.5	21.96 ^s _{.10}	15.7 ^s _{0.9}	12.03 ^s _{+.05}	34.1 ^s _{3.7}	29.36 ^s _{.10}	50.8 ^s _{0.8}	24.65 ^s _{.10}	70.3 ^s _{1.8}
17.5	22.04 ^s _{.05}	14.9 ^s _{0.7}	12.03 ^s _{-.06}	37.8 ^s _{3.7}	29.44 ^s _{.06}	50.1 ^s _{0.6}	24.73 ^s _{.06}	72.0 ^s _{1.6}
27.5	22.06 ^s _{+.01}	14.3 ^s _{0.5}	11.91 ^s _{.16}	41.4 ^s _{3.6}	29.47 ^s _{+.01}	49.6 ^s _{0.4}	24.76 ^s _{+.01}	73.5 ^s _{1.4}
Sept. 6.4	22.05 ^s _{-.03}	13.9 ^s _{0.3}	11.70 ^s _{.06}	44.9 ^s _{3.4}	29.46 ^s _{-.03}	49.3 ^s _{+.02}	24.75 ^s _{-.03}	74.8 ^s _{1.2}
16.4	21.99 ^s _{.07}	13.6 ^s _{+.01}	11.40 ^s _{.35}	48.1 ^s _{3.1}	29.41 ^s _{.07}	49.2 ^s _{0.0}	24.71 ^s _{.07}	75.9 ^s _{0.9}
26.4	21.90 ^s _{.10}	13.6 ^s _{0.0}	11.01 ^s _{.43}	51.1 ^s _{2.8}	29.33 ^s _{.10}	49.3 ^s _{-0.1}	24.62 ^s _{.09}	76.7 ^s _{0.7}
Oct. 6.3	21.79 ^s _{.12}	13.7 ^s _{-0.2}	10.54 ^s _{.49}	53.7 ^s _{2.3}	29.22 ^s _{.12}	49.5 ^s _{0.3}	24.52 ^s _{.12}	77.3 ^s _{0.5}
16.3	21.66 ^s _{.14}	13.9 ^s _{0.3}	10.02 ^s _{.54}	55.8 ^s _{1.9}	29.09 ^s _{.14}	49.8 ^s _{0.4}	24.39 ^s _{.13}	77.6 ^s _{+.02}
26.3	21.51 ^s _{.15}	14.3 ^s _{0.4}	9.46 ^s _{.58}	57.4 ^s _{1.4}	28.95 ^s _{.14}	50.2 ^s _{0.4}	24.25 ^s _{.14}	77.7 ^s _{0.0}
Nov. 5.3	21.37 ^s _{.15}	14.7 ^s _{0.5}	8.87 ^s _{.60}	58.5 ^s _{0.8}	28.80 ^s _{.14}	50.7 ^s _{0.5}	24.10 ^s _{.15}	77.6 ^s _{-0.3}
15.2	21.22 ^s _{.14}	15.2 ^s _{0.5}	8.27 ^s _{.60}	59.1 ^s _{+.03}	28.66 ^s _{.14}	51.2 ^s _{0.5}	23.96 ^s _{.14}	77.2 ^s _{0.5}
25.2	21.10 ^s _{.12}	15.7 ^s _{0.6}	7.67 ^s _{.59}	59.1 ^s _{-0.3}	28.53 ^s _{.12}	51.7 ^s _{0.5}	23.82 ^s _{.13}	76.6 ^s _{0.7}
Dec. 5.2	20.98 ^s _{.10}	16.3 ^s _{0.6}	7.09 ^s _{.55}	58.4 ^s _{0.9}	28.42 ^s _{.10}	52.3 ^s _{0.5}	23.70 ^s _{.11}	75.8 ^s _{0.9}
15.2	20.89 ^s _{.08}	16.9 ^s _{0.6}	6.56 ^s _{.50}	57.2 ^s _{1.5}	28.32 ^s _{.08}	52.8 ^s _{0.5}	23.60 ^s _{.09}	74.9 ^s _{1.0}
25.1	20.83 ^s _{.05}	17.5 ^s _{0.6}	6.08 ^s _{.44}	55.4 ^s _{2.0}	28.25 ^s _{.05}	53.3 ^s _{0.5}	23.52 ^s _{.07}	73.8 ^s _{1.2}
35.1	20.79 ^s _{-.02}	18.1 ^s _{-0.6}	5.68 ^s _{-.36}	53.2 ^s _{-2.5}	28.21 ^s _{-.02}	53.8 ^s _{-0.5}	23.47 ^s _{-.04}	72.6 ^s _{-1.2}

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	11 Cephei.		μ Capricorni.		79 Draconia.		α Aquarii.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h 21 ^m 40	+70° 45'	^h 21 ^m 46	-14° 6'	^h 21 ^m 51	+73° 8'	^h 21 ^m 59	-0° 53'
Jan. 0.1	^s 8.07 -.43	68.8 -2.1	^s 48.62 -.05	39.1 -0.2	^s 20.37 -.52	42.6 -2.0	^s 40.52 -.06	45.8 -0.8
10.1	7.68 .34	66.4 2.6	48.59 -.02	39.3 -0.1	19.89 .43	40.3 2.5	40.48 -.03	46.6 0.7
20.1	7.39 .34	63.6 2.9	48.50 +.01	39.3 +0.1	19.51 .39	37.7 2.8	40.46 .00	47.3 0.7
30.0	7.20 .13	60.6 3.1	48.62 .04	39.2 0.2	19.25 .19	34.7 3.1	40.47 +.03	47.9 0.6
Feb. 9.0	7.13 -.01	57.4 3.2	48.67 .07	38.9 0.3	19.12 -.06	31.5 3.2	40.51 .05	48.4 0.5
19.0	7.18 +.11	54.2 3.2	48.76 .10	38.5 0.5	19.13 +.08	28.3 3.2	40.58 .08	48.8 0.3
Mar. 1.0	7.35 .23	51.1 3.0	48.88 .13	37.9 0.7	19.28 .22	25.2 3.1	40.68 .11	49.0 -0.1
10.9	7.64 .34	48.2 2.7	49.03 .17	37.1 0.9	19.57 .35	22.2 2.8	40.81 .15	48.9 +0.2
20.9	8.04 .45	45.7 2.3	49.21 .20	36.1 1.1	19.98 .47	19.6 2.4	40.97 .18	48.6 0.4
30.9	8.54 .54	43.6 1.8	49.42 .23	34.9 1.3	20.51 .58	17.3 2.0	41.16 .21	48.0 0.7
Apr. 9.9	9.12 .61	42.0 1.3	49.66 .25	33.5 1.5	21.14 .67	15.6 1.5	41.39 .24	47.2 1.0
19.8	9.77 .67	41.0 0.7	49.92 .28	32.0 1.6	21.85 .74	14.4 0.9	41.64 .26	46.1 1.2
29.8	10.46 .71	40.7 -0.1	50.21 .29	30.4 1.7	22.62 .79	13.8 -0.3	41.91 .28	44.7 1.5
May 9.8	11.18 .72	40.9 +0.5	50.51 .31	28.6 1.8	23.42 .81	13.9 +0.4	42.20 .30	43.1 1.7
19.7	11.90 .71	41.7 1.1	50.83 .32	26.9 1.8	24.23 .80	14.5 1.0	42.50 .31	41.4 1.8
29.7	12.60 .68	43.2 1.7	51.15 .32	25.1 1.7	25.03 .78	15.8 1.5	42.81 .31	39.5 1.9
June 8.7	13.27 .64	45.2 2.2	51.46 .31	23.4 1.7	25.78 .73	17.6 2.1	43.12 .30	37.5 2.0
18.7	13.88 .57	47.6 2.7	51.76 .29	21.8 1.5	26.48 .66	19.9 2.5	43.42 .29	35.5 2.0
28.6	14.41 .49	50.5 3.0	52.05 .27	20.3 1.4	27.10 .58	22.6 2.9	43.70 .27	33.6 1.9
July 8.6	14.86 .40	53.7 3.3	52.30 .24	19.0 1.2	27.63 .48	25.7 3.2	43.95 .24	31.7 1.8
18.6	15.22 .30	57.1 3.5	52.53 .21	17.9 1.0	28.05 .37	29.1 3.5	44.18 .21	30.0 1.7
28.6	15.47 .20	60.7 3.7	52.71 .16	17.0 0.7	28.36 .25	32.7 3.7	44.36 .17	28.4 1.5
Aug. 7.5	15.61 +.09	64.5 3.8	52.85 .12	16.4 0.5	28.55 .13	36.4 3.8	44.51 .12	27.0 1.3
17.5	15.64 -.02	68.2 3.7	52.95 .07	16.0 0.3	28.61 +.01	40.2 3.8	44.61 .08	25.8 1.1
27.5	15.57 .13	71.9 3.6	53.00 +.03	15.9 +0.1	28.55 -.11	43.9 3.7	44.67 +.04	24.8 0.9
Sept. 6.4	15.38 .23	75.5 3.5	53.01 -.01	15.9 -0.1	28.38 .23	47.6 3.5	44.69 .00	24.1 0.6
16.4	15.10 .32	78.8 3.2	52.97 .05	16.1 0.3	28.09 .34	51.0 3.3	44.66 -.04	23.6 0.4
26.4	14.74 .41	81.9 2.9	52.90 .09	16.5 0.4	27.70 .43	54.2 3.0	44.60 .07	23.2 +0.2
Oct. 6.4	14.29 .48	84.6 2.5	52.80 .11	16.9 0.5	27.22 .52	57.1 2.7	44.51 .10	23.1 0.9
16.3	13.78 .54	86.9 2.1	52.68 .13	17.5 0.6	26.66 .59	59.6 2.2	44.40 .12	23.2 -0.1
26.3	13.22 .58	88.8 1.6	52.54 .14	18.1 0.6	26.04 .65	61.6 1.8	44.28 .13	23.4 0.3
Nov. 5.3	12.62 .61	90.1 1.0	52.39 .14	18.6 0.6	25.37 .68	63.1 1.2	44.14 .14	23.7 0.4
15.3	12.01 .62	90.8 +0.5	52.25 .14	19.2 0.6	24.67 .70	64.0 0.7	44.01 .13	24.2 0.5
25.2	11.39 .61	91.0 -0.1	52.12 .13	19.8 0.5	23.97 .70	64.4 +0.1	43.88 .12	24.7 0.6
Dec. 5.2	10.79 .58	90.6 0.7	52.00 .11	20.2 0.4	23.27 .68	64.2 -0.5	43.76 .11	25.4 0.7
15.2	10.23 .54	89.5 1.3	51.89 .09	20.6 0.4	22.61 .64	63.4 1.1	43.65 .09	26.1 0.7
25.1	9.72 .48	87.9 1.9	51.82 .07	21.0 0.3	22.00 .57	62.0 1.7	43.57 .07	26.9 0.8
35.1	9.28 -.40	85.8 -2.4	51.76 -.04	21.2 -0.2	21.46 -.49	60.0 -2.2	43.51 -.05	27.7 -0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Gruis.			θ Aquarii.			π Aquarii.			η Aquarii.		
	Right Ascension.	Declination South.		Right Ascension.	Declination South.		Right Ascension.	Declination North.		Right Ascension.	Declination South.	
	^h 22	^m 0	^s -47° 31'	^h 22	^m 10	^s -8° 22'	^h 22	^m 19	^s +0° 46'	^h 22	^m 29	^s -0° 43'
Jan. 0.1	43.62	-.11	76.8 +1.3	33.51	-.06	28.2 -0.4	12.30	-.07	32.0 -0.8	14.84	-.07	44.4 -0.7
10.1	43.53	.07	75.4 1.6	33.46	.04	28.6 0.4	12.24	.05	31.2 0.8	14.78	.05	45.1 0.7
20.1	43.48	-.03	73.6 1.9	33.43	-.01	29.0 0.3	12.21	-.02	30.5 0.7	14.74	-.03	45.8 0.6
30.1	43.48	+.02	71.6 2.1	33.44	+.02	29.2 -0.1	12.20	+.01	29.8 0.6	14.72	.00	46.4 0.6
Feb. 9.0	43.52	.07	69.3 2.3	33.47	.05	29.2 0.0	12.22	.03	29.2 0.5	14.73	+.02	46.9 0.4
19.0	43.61	.11	66.9 2.5	33.53	.08	29.1 +0.9	12.27	.06	28.7 0.4	14.77	.05	47.2 -0.2
Mar. 1.0	43.74	.15	64.4 2.6	33.62	.11	28.8 0.4	12.35	.09	28.5 -0.3	14.84	.08	47.4 0.0
11.0	43.92	.30	61.8 2.6	33.74	.14	28.3 0.6	12.46	.13	28.4 +0.1	14.94	.12	47.3 +0.2
20.9	44.14	.34	59.2 2.6	33.89	.17	27.6 0.8	12.60	.16	28.7 0.4	15.07	.15	47.0 0.4
30.9	44.40	.38	56.5 2.6	34.08	.30	26.6 1.1	12.78	.19	29.2 0.6	15.24	.18	46.4 0.7
Apr. 9.9	44.70	.39	54.0 2.5	34.30	.33	25.4 1.3	12.99	.22	29.9 0.9	15.44	.22	45.6 1.0
19.8	45.04	.35	51.6 2.3	34.54	.36	24.0 1.5	13.23	.25	31.0 1.2	15.67	.25	44.5 1.2
29.8	45.41	.38	49.4 2.1	34.81	.38	22.5 1.7	13.49	.37	32.3 1.4	15.93	.37	43.1 1.5
May 9.8	45.81	.40	47.4 1.9	35.10	.30	20.7 1.8	13.78	.29	33.8 1.7	16.21	.29	41.5 1.7
19.8	46.22	.42	45.7 1.6	35.41	.31	18.9 1.8	14.08	.31	35.6 1.8	16.51	.30	39.7 1.8
29.7	46.64	.42	44.3 1.2	35.72	.31	17.0 1.9	14.39	.31	37.5 1.9	16.82	.31	37.8 1.9
June 8.7	47.06	.41	43.3 0.9	36.04	.31	15.1 1.9	14.70	.31	39.5 2.0	17.13	.31	35.9 2.0
18.7	47.47	.40	42.6 0.5	36.34	.30	13.3 1.8	15.00	.30	41.5 2.0	17.44	.30	33.9 2.0
28.7	47.85	.37	42.3 +0.1	36.63	.28	11.6 1.7	15.29	.28	43.5 2.0	17.73	.28	31.9 2.0
July 8.6	48.20	.33	42.4 -0.3	36.90	.25	9.9 1.5	15.55	.25	45.5 1.9	18.00	.28	29.9 1.9
18.6	48.51	.28	42.9 0.7	37.13	.22	8.5 1.3	15.79	.22	47.3 1.8	18.25	.23	28.1 1.7
28.6	48.77	.22	43.7 1.0	37.33	.18	7.3 1.1	15.99	.18	49.0 1.6	18.46	.19	26.5 1.5
Aug. 7.5	48.97	.17	44.9 1.3	37.49	.14	6.3 0.9	16.15	.14	50.6 1.4	18.63	.15	25.0 1.3
17.5	49.11	.11	46.4 1.6	37.61	.09	5.5 0.7	16.27	.10	51.9 1.2	18.76	.11	23.8 1.1
27.5	49.19	+.05	48.0 1.7	37.68	.05	5.0 0.4	16.35	.06	53.0 1.0	18.85	.07	22.8 0.9
Sept. 6.5	49.20	-.02	49.9 1.9	37.71	+.01	4.7 +0.2	16.38	+.02	53.8 0.8	18.89	+.03	22.0 0.7
16.4	49.15	.08	51.8 1.9	37.70	-.03	4.6 0.0	16.38	-.02	54.5 0.5	18.90	-.01	21.5 0.4
26.4	49.05	.13	53.6 1.8	37.65	.07	4.7 -0.2	16.34	.06	54.9 0.3	18.86	.03	21.1 +0.2
Oct. 6.4	48.90	.17	55.4 1.7	37.57	.09	4.0 0.3	16.27	.09	55.1 +0.1	18.80	.08	21.0 0.0
16.4	48.70	.21	57.1 1.5	37.46	.11	5.2 0.4	16.17	.11	55.1 -0.1	18.71	.10	21.1 -0.1
26.3	48.49	.23	58.4 1.2	37.34	.13	5.7 0.5	16.05	.12	54.9 0.2	18.60	.11	21.3 0.3
Nov. 5.3	48.25	.24	59.5 0.9	37.20	.13	6.3 0.6	15.93	.13	54.6 0.4	18.48	.12	21.6 0.4
15.3	48.01	.24	60.2 0.5	37.07	.13	6.8 0.6	15.80	.13	54.2 0.5	18.35	.13	22.1 0.5
25.2	47.78	.22	60.5 -0.1	36.94	.13	7.4 0.6	15.67	.13	53.6 0.6	18.23	.12	22.6 0.6
Dec. 5.2	47.56	.20	60.4 +0.3	36.82	.11	8.0 0.6	15.55	.12	53.0 0.7	18.10	.12	23.1 0.7
15.2	47.37	.17	60.0 0.7	36.71	.10	8.6 0.6	15.44	.10	52.3 0.7	17.99	.10	24.0 0.7
25.2	47.22	.14	59.1 1.1	36.62	.08	9.2 0.5	15.34	.08	51.5 0.8	17.90	.09	24.7 0.7
35.1	47.10	-.10	57.8 +1.4	36.55	-.05	9.6 -0.4	15.27	-.06	50.7 -0.8	17.82	-.07	25.5 -0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	226 Cephei (B.)		ζ Pegasi.		ι Cephei.		λ Aquarii.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h 22 ^m 30	[°] +75 ['] 36	^h 22 ^m 35	[°] +10 ['] 12	^h 22 ^m 45	[°] +65 ['] 34	^h 22 ^m 46	[°] -8 ['] 12
Jan. 0.2	^s 8.54 -.70	["] 70.9 -1.5	^s 32.01 -.08	["] 46.5 -1.0	^s 26.04 -.39	["] 51.5 -1.4	^s 24.83 -.08	["] 41.8 -0.5
10.1	7.87 .61	69.1' 2.0	31.94 .06	45.4 1.1	25.67 .34	49.8 1.9	24.75 .06	42.2 0.4
20.1	7.31 .50	66.9 2.5	31.89 .04	44.3 1.1	25.36 .28	47.7 2.4	24.70 .04	42.5 0.3
30.1	6.87 .37	64.2 2.8	31.86 -.01	43.1 1.1	25.11 .21	45.1 2.7	24.67 -.02	42.7 -0.1
Feb. 9.1	6.57 .22	61.3 3.0	31.86 +.01	42.1 1.0	24.94 .13	42.3 2.9	24.66 +.01	42.7 +0.1
19.0	6.43 -.06	58.1 3.2	31.88 .04	41.1 0.9	24.85 -.04	39.3 3.0	24.69 .04	42.6 0.2
Mar. 1.0	6.45 +.10	54.9 3.1	31.94 .06	40.3 0.7	24.85 +.05	36.2 3.0	24.74 .07	42.3 0.4
11.0	6.63 .26	51.8 3.0	32.04 .11	39.7 0.5	24.95 .15	33.2 2.9	24.82 .10	41.8 0.7
20.9	6.97 .42	48.9 2.7	32.17 .15	39.4 -0.2	25.15 .24	30.4 2.6	24.94 .14	41.0 0.9
30.9	7.47 .56	46.4 2.4	32.33 .18	39.4 +0.1	25.44 .33	28.0 2.3	25.10 .17	40.0 1.1
Apr. 9.9	8.09 .69	44.2 1.9	32.53 .21	39.7 0.5	25.81 .41	25.9 1.8	25.28 .20	38.8 1.3
19.9	8.84 .79	42.5 1.4	32.76 .24	40.3 0.8	26.26 .48	24.3 1.3	25.50 .24	37.3 1.5
29.8	9.67 .86	41.4 0.8	33.02 .27	41.3 1.1	26.77 .54	23.3 0.7	25.75 .26	35.7 1.7
May 9.8	10.56 .91	40.9 -0.2	33.30 .29	42.6 1.4	27.33 .58	22.9 -0.2	26.03 .29	33.9 1.8
19.8	11.50 .94	41.0 +0.4	33.60 .31	44.1 1.7	27.93 .60	23.0 +0.4	26.33 .30	32.0 1.9
29.8	12.44 .93	41.7 1.0	33.91 .31	46.0 1.9	28.53 .60	23.7 1.0	26.64 .31	30.1 2.0
June 8.7	13.36 .90	43.0 1.5	34.23 .31	48.0 2.1	29.14 .59	25.0 1.5	26.95 .31	28.1 2.0
18.7	14.23 .84	44.8 2.1	34.54 .30	50.1 2.2	29.72 .57	26.8 2.0	27.26 .31	26.2 1.9
28.7	15.04 .76	47.1 2.5	34.83 .29	52.3 2.2	30.27 .52	29.1 2.5	27.56 .29	24.3 1.8
July 8.6	15.75 .66	49.8 2.9	35.11 .26	54.6 2.2	30.76 .47	31.8 2.9	27.85 .27	22.6 1.6
18.6	16.36 .55	52.9 3.2	35.35 .23	56.8 2.2	31.20 .40	34.8 3.2	28.11 .24	21.1 1.4
28.6	16.85 .43	56.3 3.5	35.57 .19	58.9 2.1	31.57 .33	38.2 3.4	28.33 .21	19.7 1.2
Aug. 7.6	17.21 .30	59.0 3.7	35.74 .15	60.9 1.9	31.86 .25	41.7 3.6	28.52 .17	18.6 1.0
17.5	17.44 .16	63.7 3.8	35.88 .11	62.8 1.7	32.07 .16	45.3 3.7	28.67 .13	17.8 0.7
27.5	17.53 +.02	67.5 3.8	35.97 .07	64.4 1.5	32.19 +.08	49.0 3.7	28.78 .08	17.2 0.5
Sept. 6.5	17.48 -.11	71.2 3.7	36.02 +.03	65.8 1.3	32.22 -.01	52.7 3.6	28.84 +.04	16.9 +0.2
16.5	17.30 .25	74.9 3.6	36.02 -.01	67.0 1.1	32.18 .09	56.2 3.5	28.86 .00	16.7 0.0
26.4	16.99 .37	78.4 3.4	35.99 .04	68.0 0.8	32.05 .16	59.6 3.3	28.85 -.04	16.8 -0.2
Oct. 6.4	16.57 .48	81.6 3.1	35.93 .07	68.7 0.6	31.85 .23	62.8 3.0	28.80 .06	17.1 0.4
16.4	16.03 .58	84.6 2.7	35.85 .10	69.2 0.4	31.59 .29	65.6 2.6	28.72 .09	17.5 0.5
26.3	15.41 .66	87.1 2.3	35.74 .11	69.4 +0.1	31.27 .34	68.0 2.2	28.62 .11	18.1 0.6
Nov. 5.3	14.71 .73	89.1 1.8	35.62 .12	69.4 -0.1	30.91 .38	70.0 1.7	28.50 .12	18.7 0.6
15.3	13.95 .78	90.7 1.3	35.49 .13	69.2 0.3	30.51 .41	71.5 1.2	28.38 .12	19.3 0.7
25.3	13.15 .80	91.7 0.7	35.36 .13	68.8 0.5	30.08 .43	72.4 0.7	28.25 .12	20.0 0.7
Dec. 5.2	12.34 .81	92.0 +0.1	35.24 .12	68.2 0.7	29.64 .44	72.8 +0.1	28.13 .12	20.6 0.6
15.2	11.54 .79	91.8 -0.5	35.12 .11	67.4 0.9	29.21 .43	72.6 -0.5	28.02 .11	21.3 0.6
25.2	10.77 .74	90.9 1.1	35.02 .10	66.5 1.0	28.78 .41	71.7 1.1	27.91 .10	21.9 0.5
35.2	10.06 -.68	89.5 -1.7	34.93 -.07	65.4 -1.1	28.39 -.37	70.3 -1.7	27.83 -.08	22.4 -0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Piscis Australis. (Fomalhaut.)		α Pegasi. (Markab.)		α Cephei.		θ Piscium.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 22 ^m 51	[°] -30 ['] 14	^h 22 ^m 56	[°] +14 ['] 33	^h 23 ^m 13	[°] +67 ['] 27	^h 23 ^m 21	[°] +5 ['] 43
Jan. 0.2	4.77 ^s -10	72.6 +0.2	50.51 ^s -0.09	65.0 -1.1	44.41 ^s -44	62.3 -1.0	56.55 ^s -10	38.9 -0.8
10.2	4.67 .08	72.2 0.5	50.42 .08	63.9 1.2	43.98 .41	61.0 1.6	56.46 .09	38.1 0.8
20.1	4.60 .06	71.5 0.8	50.35 .06	62.7 1.2	43.59 .36	59.2 2.1	56.38 .07	37.2 0.8
30.1	4.56 -0.03	70.5 1.1	50.30 .04	61.4 1.3	43.27 .29	56.9 2.5	56.31 .05	36.4 0.8
Feb. 9.1	4.54 .00	69.3 1.3	50.27 -0.01	60.2 1.2	43.02 .21	54.2 2.8	56.27 -0.03	35.6 0.7
19.0	4.56 +0.03	67.9 1.6	50.27 +0.02	59.0 1.1	42.86 .12	51.3 2.9	56.26 .00	35.0 0.6
Mar. 1.0	4.61 .07	66.2 1.8	50.31 .05	58.0 0.9	42.79 -0.02	48.3 3.0	56.27 +0.03	34.5 0.4
11.0	4.70 .11	64.3 1.9	50.38 .09	57.1 0.7	42.83 +0.09	45.3 3.0	56.32 .06	34.2 -0.2
21.0	4.82 .14	62.3 2.1	50.49 .13	56.6 0.4	42.97 .19	42.4 2.8	56.40 .10	34.1 +0.1
30.9	4.99 .18	60.2 2.2	50.63 .16	56.3 -0.1	43.21 .30	39.8 2.5	56.52 .14	34.3 0.3
Apr. 9.9	5.19 .22	57.9 2.3	50.81 .20	56.3 +0.2	43.56 .39	37.5 2.1	56.67 .17	34.8 0.6
19.9	5.42 .25	55.6 2.3	51.03 .23	56.7 0.6	43.99 .47	35.6 1.6	56.86 .21	35.5 0.9
29.9	5.69 .28	53.3 2.3	51.28 .26	57.4 0.9	44.50 .54	34.2 1.1	57.09 .24	36.6 1.2
May 9.8	5.99 .31	51.1 2.2	51.55 .29	58.5 1.3	45.07 .60	33.4 -0.5	57.35 .27	37.9 1.5
19.8	6.31 .33	48.9 2.1	51.85 .31	59.9 1.6	45.69 .63	33.1 0.0	57.63 .29	39.5 1.7
29.8	6.65 .34	46.9 1.9	52.16 .32	61.6 1.8	46.34 .65	33.4 +0.6	57.93 .31	41.3 1.9
June 8.7	7.00 .35	45.1 1.7	52.48 .32	63.5 2.0	46.99 .65	34.3 1.2	58.25 .31	43.2 2.0
18.7	7.34 .34	43.5 1.4	52.80 .31	65.6 2.2	47.63 .63	35.8 1.7	58.56 .31	45.3 2.1
28.7	7.68 .33	42.2 1.1	53.10 .30	67.9 2.3	48.25 .60	37.7 2.2	58.87 .30	47.4 2.1
July 8.7	8.00 .31	41.2 0.8	53.39 .28	70.2 2.3	48.82 .55	40.1 2.6	59.16 .28	49.5 2.1
18.6	8.29 .27	40.6 0.5	53.66 .25	72.5 2.3	49.34 .49	42.9 2.9	59.44 .26	51.5 2.0
28.6	8.55 .24	40.3 +0.1	53.89 .21	74.8 2.2	49.79 .41	46.0 3.2	59.68 .23	53.5 1.9
Aug. 7.6	8.77 .19	40.4 -0.2	54.08 .18	77.0 2.1	50.17 .33	49.3 3.5	59.89 .19	55.3 1.7
17.6	8.94 .15	40.8 0.5	54.24 .14	79.0 2.0	50.46 .25	52.9 3.6	60.07 .16	56.9 1.5
27.5	9.06 .10	41.5 0.8	54.36 .09	80.9 1.8	50.67 .16	56.6 3.7	60.21 .12	58.3 1.3
Sept. 6.5	9.14 +0.05	42.4 1.0	54.43 .05	82.6 1.6	50.78 +0.07	60.3 3.7	60.31 .08	59.5 1.1
16.5	9.16 .00	43.5 1.2	54.46 +0.01	84.1 1.3	50.81 -0.02	63.9 3.6	60.36 +0.04	60.5 0.8
26.4	9.14 -0.04	44.9 1.4	54.45 -0.02	85.3 1.1	50.75 .10	67.4 3.4	60.38 .00	61.2 0.6
Oct. 6.4	9.08 .08	46.3 1.4	54.41 .05	86.3 0.9	50.61 .18	70.8 3.2	60.36 -0.03	61.7 0.4
16.4	8.98 .11	47.7 1.4	54.34 .08	87.0 0.6	50.40 .25	73.9 2.9	60.32 .06	62.0 +0.2
26.4	8.86 .13	49.0 1.3	54.25 .10	87.5 0.3	50.12 .31	76.6 2.5	60.25 .08	62.0 0.0
Nov. 5.3	8.72 .15	50.3 1.2	54.14 .11	87.7 +0.1	49.77 .37	78.9 2.1	60.16 .10	61.9 -0.2
15.3	8.57 .16	51.3 1.0	54.02 .12	87.7 -0.1	49.38 .41	80.8 1.6	60.06 .11	61.6 0.4
25.3	8.41 .16	52.2 0.7	53.90 .13	87.4 0.4	48.95 .44	82.1 1.1	59.94 .11	61.2 0.5
Dec. 5.3	8.25 .15	52.8 0.5	53.77 .12	86.9 0.6	48.49 .46	82.9 +0.5	59.83 .12	60.6 0.6
15.2	8.11 .14	53.2 -0.2	53.65 .12	86.2 0.8	48.02 .47	83.1 -0.1	59.71 .11	59.9 0.7
25.2	7.98 .12	53.3 +0.1	53.54 .11	85.3 1.0	47.55 .46	82.7 0.7	59.60 .11	59.2 0.8
35.2	7.87 -10	53.1 +0.4	53.44 -10	84.3 -1.1	47.10 -44	81.7 -1.3	59.50 -10	58.3 -0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♈ Piscium.		γ Cephei.		Groombridge 4163.		ω Piscium.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 23 ^m 33	[°] +4 ['] 58	^h 23 ^m 34	[°] +76 ['] 58	^h 23 ^m 49	[°] +73 ['] 44	^h 23 ^m 53	[°] + 6 ['] 12
Jan. 0.2	^s 50.51 -10	60.4 -0.8	^s 27.71 -85	31.2 -0.6	^s 3.63 -67	79.0 -0.5	^s 12.89 -10	23.8 -0.8
10.2	50.41 .09	59.6 0.8	26.88 .80	30.3 1.2	2.98 .63	78.2 1.1	12.79 .10	23.0 0.8
20.2	50.32 .08	58.8 0.8	26.12 .79	28.8 1.8	2.37 .58	76.8 1.6	12.69 .09	22.2 0.8
30.1	50.25 .06	58.0 0.8	25.44 .61	26.8 2.2	1.82 .51	74.9 2.1	12.61 .07	21.4 0.8
Feb. 9.1	50.20 .04	57.3 0.7	24.89 .48	24.3 2.6	1.36 .41	72.6 2.5	12.54 .05	20.7 0.7
19.1	50.18 -.01	56.7 0.5	24.48 .33	21.5 2.9	1.00 .29	69.9 2.8	12.50 -.03	20.1 0.6
Mar. 1.1	50.18 +.02	56.2 0.4	24.24 -16	18.5 3.1	0.77 .16	67.0 3.0	12.48 .06	19.6 0.4
11.0	50.21 .05	55.9 -0.3	24.17 +.02	15.4 3.1	0.68 -.02	63.9 3.1	12.50 +.03	19.2 -0.2
21.0	50.28 .09	55.9 +0.1	24.29 .21	12.3 3.0	0.74 +.13	60.9 3.0	12.55 .07	19.1 0.0
31.0	50.39 .13	56.1 0.4	24.59 .38	9.4 2.8	0.94 .27	58.0 2.8	12.63 .11	19.3 +0.3
Apr. 9.9	50.53 .16	56.6 0.6	25.05 .55	6.7 2.5	1.29 .41	55.3 2.5	12.76 .15	19.7 0.6
19.9	50.72 .20	57.4 0.9	25.68 .70	4.5 2.1	1.77 .54	53.0 2.1	12.93 .19	20.4 0.8
29.9	50.94 .23	58.5 1.2	26.44 .82	2.6 1.6	2.36 .65	51.1 1.6	13.13 .22	21.4 1.1
May 9.9	51.19 .26	59.8 1.4	27.32 .92	1.3 1.0	3.06 .74	49.7 1.1	13.37 .25	22.6 1.4
19.8	51.46 .29	61.4 1.7	28.29 .99	0.5 -0.5	3.84 .80	48.8 -0.6	13.64 .28	24.1 1.6
29.8	51.76 .30	63.1 1.9	29.31 1.03	0.3 +0.1	4.67 .85	48.5 0.0	13.93 .30	25.8 1.8
June 8.8	52.07 .31	65.1 2.0	30.35 1.04	0.7 0.7	5.53 .86	48.8 +0.6	14.24 .31	27.7 1.9
18.7	52.39 .31	67.1 2.0	31.39 1.02	1.7 1.2	6.40 .86	49.6 1.1	14.55 .31	29.7 2.0
28.7	52.70 .30	69.2 2.1	32.40 .98	3.2 1.8	7.25 .83	51.0 1.6	14.87 .31	31.7 2.1
July 8.7	53.00 .29	71.2 2.0	33.35 .91	5.2 2.2	8.06 .78	52.9 2.1	15.17 .30	33.8 2.1
18.7	53.28 .27	73.2 2.0	34.22 .82	7.7 2.7	8.81 .72	55.3 2.5	15.46 .28	35.8 2.0
28.6	53.53 .24	75.1 1.8	34.99 .72	10.5 3.0	9.49 .64	58.0 2.9	15.73 .25	37.8 1.9
Aug. 7.6	53.75 .21	76.9 1.7	35.65 .59	13.7 3.3	10.08 .54	61.1 3.2	15.97 .22	39.6 1.7
17.6	53.94 .17	78.4 1.5	36.18 .46	17.2 3.6	10.57 .44	64.4 3.4	16.17 .18	41.2 1.5
27.6	54.09 .13	79.8 1.3	36.57 .39	20.8 3.7	10.96 .33	68.0 3.6	16.33 .15	42.7 1.3
Sept. 6.5	54.20 .09	80.9 1.0	36.82 .18	24.6 3.8	11.23 .21	71.7 3.7	16.46 .11	43.9 1.1
16.5	54.27 .05	81.8 0.8	36.93 +.03	28.4 3.8	11.38 +.10	75.4 3.7	16.55 .07	44.9 0.9
26.5	54.30 +.01	82.5 0.6	36.89 -11	32.1 3.7	11.42 -.02	79.1 3.7	16.60 +.03	45.6 0.6
Oct. 6.4	54.29 -.02	83.0 0.3	36.71 .25	35.7 3.5	11.34 .13	82.7 3.5	16.62 .00	46.1 0.4
16.4	54.26 .05	83.2 +0.1	36.39 .38	39.2 3.3	11.16 .24	86.1 3.3	16.60 -.03	46.4 +0.2
26.4	54.20 .07	83.2 -0.1	35.96 .49	42.3 3.0	10.87 .34	89.3 3.0	16.56 .05	46.5 0.0
Nov. 5.4	54.12 .09	83.1 0.2	35.40 .61	45.1 2.6	10.48 .43	92.1 2.6	16.49 .07	46.4 -0.2
15.3	54.02 .10	82.8 0.4	34.74 .70	47.5 2.1	10.01 .51	94.5 2.2	16.41 .09	46.2 0.3
25.3	53.92 .11	82.3 0.6	34.00 .78	49.3 1.6	9.46 .58	96.4 1.7	16.31 .10	45.8 0.5
Dec. 5.3	53.81 .11	81.7 0.6	33.19 .83	50.6 1.0	8.86 .63	97.8 1.1	16.21 .11	45.2 0.6
15.3	53.69 .11	81.0 0.7	32.34 .86	51.3 +0.4	8.21 .66	98.7 +0.5	16.10 .11	44.6 0.7
25.2	53.58 .10	80.3 0.8	31.47 .86	51.4 -0.2	7.53 .67	98.9 -0.1	15.99 .11	43.9 0.8
35.2	53.48 -.10	79.5 -0.8	30.62 -.84	50.9 -0.8	6.87 -.65	98.5 -0.7	15.88 -.11	43.1 -0.8

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		Hourly Motion, Mean Noon.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
1881.	h m s	h m s	h m s	h m s	h m s	h m s	m s	h m s	h m s	h m s
Jan. 1	18 50 1.86	2.61	-22 57 21.4	20.5	11.033	+13.19	4 5.50	16 18.36	11.05	18 45 56.44
2	18 54 26.48	27.32	22 51 51.2	50.1	11.018	14.33	4 33.56	18.36	11.01	18 49 53.00
3	18 58 50.71	51.63	22 45 53.7	52.4	11.001	15.46	5 1.24	18.35	10.96	18 53 49.56
4	19 3 14.52	15.52	22 39 29.1	27.6	10.983	16.58	5 28.49	18.34	10.90	18 57 46.13
5	19 7 37.88	38.96	22 32 37.7	36.0	10.963	17.70	5 55.30	18.33	10.84	19 1 42.68
6	19 12 0.77	1.93	22 25 19.5	17.5	10.943	18.81	6 21.63	18.31	10.77	19 5 39.23
7	19 16 23.14	24.38	22 17 34.9	32.7	10.921	19.90	6 47.46	18.28	10.70	19 9 35.79
8	19 20 44.99	46.30	22 9 24.1	21.6	10.898	20.99	7 12.76	18.25	10.63	19 13 32.35
9	19 25 6.27	7.65	22 0 47.3	44.5	10.874	22.06	7 37.49	18.21	10.55	19 17 28.91
10	19 29 26.96	28.41	21 51 44.9	41.8	10.850	23.13	8 1.63	18.17	10.47	19 21 25.46
11	19 33 47.05	48.57	21 42 17.0	13.6	10.824	24.18	8 25.16	18.12	10.39	19 25 22.02
12	19 38 6.51	8.09	21 32 23.9	20.1	10.798	25.23	8 48.07	18.07	10.31	19 29 18.58
13	19 42 25.32	26.97	21 22 5.9	1.8	10.771	26.26	9 10.32	18.01	10.23	19 33 15.14
14	19 46 43.47	45.19	21 11 23.2	18.8	10.743	27.28	9 31.92	17.94	10.14	19 37 11.60
15	19 51 0.96	2.73	21 0 16.3	11.6	10.714	28.29	9 52.85	17.87	10.05	19 41 8.25
16	19 55 17.75	19.58	20 48 45.2	40.2	10.685	29.29	10 13.09	17.80	9.95	19 45 4.80
17	19 59 33.85	35.73	20 36 50.4	45.1	10.656	30.26	10 32.63	17.72	9.85	19 49 1.36
18	20 3 49.24	51.17	20 24 32.9	26.5	10.626	31.24	10 51.46	17.63	9.75	19 52 57.92
19	20 8 3.90	5.88	20 11 50.8	44.8	10.596	32.19	11 9.56	17.54	9.65	19 56 54.48
20	20 12 17.83	19.85	19 58 46.7	40.3	10.565	33.14	11 26.94	17.44	9.54	20 0 51.03
21	20 16 31.02	33.08	19 45 20.1	13.4	10.534	34.06	11 43.57	17.33	9.43	20 4 47.59
22	20 20 43.45	45.55	19 31 31.5	24.4	10.502	34.98	11 59.43	17.22	9.32	20 8 44.15
23	20 24 55.12	57.26	19 17 21.1	13.7	10.470	35.87	12 14.54	17.10	9.21	20 12 40.71
24	20 29 6.02	8.19	19 2 49.3	41.6	10.438	36.76	12 28.88	16.98	9.10	20 16 37.26
25	20 33 16.14	18.34	18 47 56.5	48.5	10.405	37.63	12 42.44	16.86	8.99	20 20 33.82
26	20 37 25.47	27.70	18 32 43.1	34.8	10.372	38.48	12 55.21	16.73	8.88	20 24 30.37
27	20 41 34.00	36.26	18 17 9.5	0.9	10.339	39.31	13 7.18	16.60	8.77	20 28 26.93
28	20 45 41.73	44.01	18 1 16.2	7.3	10.305	40.12	13 18.35	16.46	8.65	20 32 23.48
29	20 49 48.64	50.95	17 44 63.5	54.3	10.271	40.92	13 28.69	16.33	8.54	20 36 20.04
30	20 53 54.73	57.06	17 28 31.8	22.3	10.236	41.70	13 38.21	16.19	8.42	20 40 16.60
31	20 57 59.99	62.34	17 11 41.7	31.9	10.202	42.47	13 46.91	16.05	8.31	20 44 13.16
Feb. 1	21 2 4.43	6.79	16 54 33.3	23.3	10.167	43.22	13 54.79	15.90	8.19	20 48 9.71
2	21 6 8.03	10.41	16 36 67.3	57.0	10.133	43.94	14 1.83	15.75	8.08	20 52 6.27
3	21 10 10.80	13.19	16 19 24.1	13.6	10.098	44.65	14 8.04	15.60	7.96	20 56 2.82
4	21 14 12.74	15.14	16 1 24.0	13.2	10.064	45.34	14 13.41	15.44	7.85	20 59 59.38
5	21 18 13.85	16.25	15 42 67.5	56.5	10.029	46.02	14 17.95	15.28	7.73	21 3 55.93
6	21 22 14.13	16.53	15 24 35.0	23.8	9.995	46.68	14 21.67	15.12	7.62	21 7 52.49
7	21 26 13.59	15.99	15 5 46.9	35.5	9.960	47.32	14 24.57	14.95	7.50	21 11 49.04
8	21 30 12.23	14.63	14 46 43.7	32.1	9.926	47.94	14 26.66	14.78	7.39	21 15 45.60
9	21 34 10.07	12.46	14 27 25.7	14.0	9.893	48.55	14 27.93	14.60	7.28	21 19 42.15
10	21 38 7.11	9.49	14 7 53.4	41.5	9.860	49.13	14 28.40	14.42	7.17	21 23 38.71
11	21 42 3.37	5.74	13 47 67.1	55.1	9.828	49.71	14 28.10	14.23	7.06	21 27 35.26
12	21 45 58.86	61.22	13 27 67.3	55.2	9.796	50.27	14 27.03	14.04	6.95	21 31 31.82
13	21 49 53.59	55.94	13 7 54.3	42.1	9.765	50.81	14 25.20	13.84	6.85	21 35 28.37
14	21 53 47.58	49.92	12 47 28.5	16.2	9.734	51.33	14 22.63	13.64	6.74	21 39 24.93
15	21 57 40.84	43.16	12 26 50.3	37.9	9.704	51.84	14 19.33	13.44	6.64	21 43 21.48
16	22 1 33.38	35.68	12 5 60.1	47.6	9.675	52.33	14 15.31	13.23	6.54	21 47 18.03
17	22 5 25.22	27.50	11 44 58.3	45.8	9.646	52.81	14 10.59	13.01	6.44	21 51 14.58
18	22 9 16.39	18.65	11 23 45.3	32.7	9.618	53.27	14 5.20	12.79	6.34	21 55 11.14
19	22 13 6.90	9.13	11 2 21.5	8.9	9.591	53.71	13 59.15	12.57	6.24	21 59 7.60
20	22 16 56.76	58.96	10 40 47.3	34.6	9.564	54.13	13 52.45	12.34	6.14	22 3 4.25
21	22 20 45.98	48.16	10 18 63.1	50.4	9.538	54.54	13 45.11	12.11	6.05	22 7 0.80
22	22 24 34.59	36.75	9 56 69.3	56.7	9.513	54.93	13 37.16	11.88	5.96	22 10 57.36
23	22 28 22.60	24.73	9 34 66.3	53.8	9.488	55.31	13 28.61	11.65	5.87	22 14 53.91
24	22 32 10.02	12.12	9 12 54.6	42.2	9.464	55.67	13 19.48	11.42	5.78	22 18 50.46
25	22 35 56.87	58.94	8 50 34.5	22.2	9.441	56.00	13 9.77	11.18	5.70	22 22 47.01
26	22 39 43.17	45.21	8 27 66.6	54.4	9.418	56.32	12 59.51	10.94	5.61	22 26 43.57
27	22 43 28.92	30.93	8 5 31.2	19.1	9.395	56.62	12 48.71	10.70	5.53	22 30 40.12
28	22 47 14.14	16.12	7 42 48.7	36.7	9.373	56.90	12 37.37	10.46	5.45	22 34 36.68
29	22 50 58.85	60.79	7 19 59.6	47.7	9.352	57.17	12 25.52	10.22	5.38	22 38 33.23
30	22 54 43.05	44.95	6 56 64.3	52.5	9.332	57.42	12 13.17	9.98	5.31	22 42 29.79
31	22 58 26.77	28.63	- 6 33 63.1	51.5	9.312	+57.66	+12 0.33	16 9.73	5.25	22 46 26.34

NOTE.—For Mean interval of Semidiameter passing the Meridian, subtract 0.19 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		Hourly Motion, Mean Noon.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
1881.										
Mar. 1	^h 22 ^m 50 ^s 58.85	^s 60.79	[°] - 7 ['] 19 ["] 59.6	["] 47.7	^s 9.352	["] +57.17	^m +12 ^s 25.52	['] 16 ["] 10.22	^m 1 ^s 5.38	^h 22 ^m 38 ^s 33.23
2	22 54 43.05	44.95	6 56 64.3	52.5	9.332	57.42	12 13.17	9.98	5.31	22 42 29.79
3	22 58 26.77	28.63	6 33 63.1	51.5	9.312	57.66	12 0.33	9.73	5.25	22 46 26.34
4	23 2 10.01	11.83	6 10 56.7	45.3	9.293	57.87	11 47.01	9.48	5.18	22 50 22.90
5	23 5 52.81	54.59	5 47 45.2	34.0	9.274	58.07	11 33.25	9.23	5.12	22 54 19.45
6	23 9 35.17	36.91	5 24 29.2	18.2	9.256	58.25	11 19.06	8.98	5.06	22 58 16.00
7	23 13 17.10	18.20	5 0 69.0	58.2	9.239	58.42	11 4.44	8.73	5.00	23 2 12.55
8	23 16 58.64	60.30	4 47 44.9	34.3	9.223	58.57	10 49.43	8.48	4.94	23 6 9.10
9	23 20 39.79	41.42	4 14 17.5	7.2	9.207	58.71	10 34.03	8.22	4.89	23 10 5.65
10	23 24 20.59	22.17	3 50 46.9	36.8	9.193	58.83	10 18.27	7.97	4.84	23 14 2.21
11	23 28 1.04	2.58	3 27 13.7	3.8	9.179	58.93	10 2.17	7.71	4.79	23 17 58.76
12	23 31 41.18	42.68	3 3 38.1	28.4	9.167	59.02	9 45.75	7.45	4.75	23 21 55.32
13	23 35 21.03	22.49	2 39 60.5	51.1	9.156	59.10	9 20.05	7.18	4.71	23 25 51.87
14	23 39 0.62	2.03	2 16 21.2	12.1	9.145	59.16	9 12.09	6.92	4.67	23 29 48.42
15	23 42 39.95	41.32	1 52 40.7	31.9	9.135	59.21	8 54.87	6.65	4.64	23 33 44.97
16	23 46 19.07	20.39	1 28 59.1	50.6	9.126	59.24	8 37.44	6.38	4.61	23 37 41.52
17	23 49 57.99	59.26	1 5 17.0	8.8	9.118	59.26	8 19.81	6.10	4.58	23 41 38.07
18	23 53 36.73	37.96	0 41 34.5	26.6	9.111	59.26	8 2.00	5.83	4.56	23 45 34.63
19	23 57 15.32	16.50	- 0 17 52.3	44.7	9.105	59.25	7 44.04	5.55	4.54	23 49 31.18
20	0 0 53.79	54.92	+ 0 5 49.6	56.9	9.101	59.22	7 25.96	5.27	4.52	23 53 27.73
21	0 4 32.15	33.23	0 29 30.7	37.7	9.097	59.19	7 7.78	4.99	4.50	23 57 24.28
22	0 8 10.44	11.47	0 53 10.6	17.3	9.094	59.13	6 49.51	4.71	4.49	0 1 20.84
23	0 11 48.66	49.65	1 16 49.2	55.6	9.092	59.06	6 31.19	4.43	4.48	0 5 17.39
24	0 15 26.85	27.79	1 40 25.8	31.9	9.091	58.98	6 12.83	4.15	4.47	0 9 13.94
25	0 19 5.01	5.90	2 4 0.2	6.0	9.090	58.88	5 54.44	3.87	4.46	0 13 10.49
26	0 22 43.17	44.02	2 27 32.0	37.5	9.090	58.76	5 36.04	3.59	4.46	0 17 7.05
27	0 26 21.35	22.15	2 51 0.7	5.9	9.091	58.63	5 17.67	3.30	4.47	0 21 3.60
28	0 29 59.56	60.31	3 14 26.2	31.1	9.093	58.48	4 59.34	3.02	4.47	0 25 0.15
29	0 33 37.81	38.52	3 37 47.8	52.4	9.095	58.32	4 41.05	2.74	4.48	0 28 56.70
30	0 37 16.13	16.79	4 1 15.4	9.7	9.098	58.14	4 22.82	2.46	4.49	0 32 53.26
31	0 40 54.53	55.15	4 24 18.5	22.5	9.102	57.94	4 4.67	2.19	4.51	0 36 49.81
Apr. 1	0 44 33.03	33.60	4 47 26.7	30.4	9.106	57.73	3 46.62	1.91	4.52	0 40 46.36
2	0 48 11.64	12.17	5 10 29.7	33.0	9.111	57.51	3 28.69	1.64	4.54	0 44 42.91
3	0 51 50.38	50.86	5 33 27.2	30.2	9.117	57.27	3 10.87	1.37	4.56	0 48 39.47
4	0 55 29.26	29.71	5 56 18.7	21.4	9.123	57.01	2 53.20	1.10	4.58	0 52 36.02
5	0 59 8.30	8.69	6 19 3.9	6.3	9.130	56.74	2 35.69	0.83	4.61	0 56 32.57
6	1 2 47.51	47.86	6 41 42.5	44.7	9.138	56.46	2 18.36	0.56	4.64	1 0 29.12
7	1 6 26.91	27.21	7 4 14.2	16.1	9.147	56.17	2 1.21	0.29	4.67	1 4 25.68
8	1 10 6.53	6.79	7 26 38.6	40.2	9.156	55.86	1 44.28	16 0.02	4.71	1 8 22.23
9	1 13 46.39	46.61	7 48 55.5	56.8	9.166	55.54	1 27.58	15 59.75	4.75	1 12 18.79
10	1 17 26.51	26.69	8 11 4.3	5.4	9.177	55.20	1 11.15	59.49	4.79	1 16 15.34
11	1 21 6.89	7.03	8 33 5.0	5.8	9.189	54.85	0 54.99	59.22	4.83	1 20 11.89
12	1 24 47.56	47.66	8 54 57.0	57.6	9.201	54.48	0 39.12	58.95	4.88	1 24 8.44
13	1 28 28.54	28.60	9 16 40.2	40.5	9.214	54.11	0 23.54	58.68	4.93	1 28 5.00
14	1 32 9.84	9.86	9 38 14.2	14.3	9.228	53.72	+ 0 8.29	58.42	4.98	1 32 1.55
15	1 35 51.50	51.47	9 59 38.7	38.6	9.243	53.32	- 0 6.61	58.15	5.03	1 35 58.11
16	1 39 33.51	33.45	10 20 53.3	53.0	9.258	52.90	0 21.15	57.88	5.09	1 39 54.66
17	1 43 15.92	15.82	10 41 57.8	57.3	9.275	52.46	0 35.30	57.61	5.14	1 43 51.22
18	1 46 58.73	58.60	11 2 51.8	51.1	9.292	52.02	0 49.04	57.35	5.20	1 47 47.77
19	1 50 41.96	41.80	11 23 35.0	34.1	9.310	51.57	1 2.35	57.08	5.26	1 51 44.32
20	1 54 25.63	25.44	11 44 7.1	6.0	9.329	51.10	1 15.23	56.82	5.32	1 55 40.87
21	1 58 9.76	9.53	12 4 27.7	26.4	9.348	50.63	1 27.68	56.55	5.38	1 59 37.43
22	2 1 54.35	54.09	12 24 36.6	35.2	9.368	50.12	1 39.65	56.29	5.45	2 3 33.98
23	2 5 39.41	39.12	12 44 33.4	31.8	9.388	49.61	1 51.13	56.03	5.52	2 7 30.54
24	2 9 24.06	24.64	13 4 17.7	16.0	9.408	49.08	2 2.12	55.77	5.59	2 11 27.09
25	2 13 11.01	10.66	13 23 49.0	47.2	9.429	48.54	2 12.62	55.52	5.66	2 15 23.65
26	2 16 57.56	57.18	13 43 7.1	5.2	9.450	47.98	2 22.62	55.27	5.73	2 19 20.20
27	2 20 44.62	44.21	14 2 11.7	9.7	9.471	47.41	2 32.12	55.02	5.80	2 23 16.76
28	2 24 32.19	31.76	14 21 2.6	0.5	9.493	46.82	2 41.10	54.78	5.88	2 27 13.31
29	2 28 20.28	19.83	14 39 33.9	37.1	9.514	46.22	2 49.57	54.54	5.95	2 31 9.87
30	2 32 8.89	8.42	14 57 61.4	59.1	9.536	45.61	2 57.51	54.30	6.03	2 35 6.42
31	2 35 58.03	57.54	+15 16 8.7	6.3	9.558	+44.99	- 3 4.93	15 54.07	1 6.11	2 39 2.98

NOTE.—For Mean interval of Semidiameter passing the Meridian, subtract 0.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		Hourly Motion, Mean Noon.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
1881.	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
May 1	^h 2 ^m 35 ^s 58.03	^s 57.54	[°] 15 ['] 16 ["] 8.7	["] 6.3	^s 9.558	[°] 44.99	^m -3 ^s 4.93	['] 15 ["] 54.07	^m 1 ^s 6.11	^h 2 ^m 39 ^s 2.98
2	2 39 47.70	47.19	15 33 60.8	58.4	9.581	44.35	3 11.81	53.84	6.19	2 42 59.53
3	2 43 37.91	37.38	15 51 37.4	35.0	9.603	43.70	3 18.16	53.61	6.27	2 46 56.09
4	2 47 28.66	28.12	16 8 58.2	55.8	9.626	43.03	3 23.97	53.39	6.35	2 50 52.64
5	2 51 19.95	19.39	16 26 2.9	0.4	9.648	42.36	3 29.24	53.17	6.43	2 54 49.20
6	2 55 11.78	11.21	16 42 51.2	48.7	9.671	41.67	3 33.97	52.96	6.51	2 58 45.75
7	2 59 4.16	3.57	16 59 22.8	20.3	9.694	40.97	3 38.14	52.74	6.59	3 2 42.31
8	3 2 57.09	56.49	17 15 37.4	34.9	9.717	40.25	3 41.76	52.53	6.68	3 6 38.86
9	3 6 50.58	49.97	17 31 34.7	32.2	9.740	39.52	3 44.83	52.32	6.76	3 10 35.42
10	3 10 44.63	44.01	17 47 14.4	11.9	9.764	38.78	3 47.33	52.11	6.84	3 14 31.97
11	3 14 39.25	38.62	18 2 36.3	33.8	9.787	38.03	3 49.27	51.90	6.92	3 18 28.53
12	3 18 34.43	33.80	18 17 40.1	37.7	9.811	37.27	3 50.65	51.70	7.01	3 22 25.06
13	3 22 30.19	29.56	18 32 25.5	23.1	9.835	36.50	3 51.45	51.50	7.09	3 26 21.64
14	3 26 26.51	25.88	18 46 52.2	49.9	9.859	35.72	3 51.63	51.30	7.17	3 30 18.19
15	3 30 23.41	22.78	19 0 59.9	57.6	9.883	34.93	3 51.33	51.10	7.25	3 34 14.75
16	3 34 20.89	20.26	19 14 48.4	46.2	9.907	34.12	3 50.41	50.90	7.33	3 38 11.30
17	3 38 18.94	18.31	19 28 17.5	15.3	9.931	33.30	3 48.92	50.71	7.41	3 42 7.86
18	3 42 17.56	16.94	19 41 26.7	24.6	9.955	32.47	3 46.86	50.52	7.49	3 46 4.42
19	3 46 16.76	16.14	19 54 16.0	14.0	9.979	31.63	3 44.22	50.33	7.57	3 50 0.98
20	3 50 16.53	15.92	20 6 45.0	43.1	10.002	30.78	3 41.01	50.14	7.65	3 53 57.53
21	3 54 16.86	16.26	20 18 53.5	51.7	10.025	29.92	3 37.24	49.96	7.73	3 57 54.09
22	3 58 17.73	17.14	20 30 41.2	39.5	10.048	29.05	3 32.92	49.78	7.80	4 1 50.64
23	4 2 19.14	18.56	20 42 7.8	6.2	10.070	28.16	3 28.06	49.60	7.87	4 5 47.20
24	4 6 21.09	20.51	20 53 13.1	11.6	10.092	27.27	3 22.67	49.43	7.94	4 9 43.75
25	4 10 23.55	22.99	21 3 56.8	55.4	10.113	26.37	3 16.77	49.27	8.01	4 13 40.31
26	4 14 26.52	25.98	21 14 18.7	17.4	10.134	25.46	3 10.36	49.11	8.08	4 17 36.87
27	4 18 29.98	29.46	21 24 18.7	17.4	10.154	24.54	3 3.46	48.96	8.15	4 21 33.43
28	4 22 33.90	33.40	21 33 56.5	55.3	10.173	23.61	2 56.09	48.80	8.21	4 25 29.98
29	4 26 38.27	37.79	21 43 11.9	10.8	10.191	22.67	2 48.28	48.66	8.27	4 29 26.54
30	4 30 43.08	42.62	21 52 4.7	3.7	10.209	21.72	2 40.03	48.52	8.33	4 33 23.10
31	4 34 48.30	47.86	22 0 34.7	33.8	10.225	20.77	2 31.37	48.38	8.39	4 37 19.66
June 1	4 38 53.91	53.50	22 8 41.7	40.9	10.242	19.81	2 22.31	48.25	8.45	4 41 16.21
2	4 42 59.90	59.51	22 16 25.6	24.9	10.257	18.84	2 12.88	48.12	8.51	4 45 12.77
3	4 47 6.25	5.89	22 23 46.1	45.5	10.272	17.87	2 3.09	48.00	8.56	4 49 9.32
4	4 51 12.93	12.60	22 30 43.2	42.6	10.285	16.89	1 52.96	47.88	8.61	4 53 5.88
5	4 55 19.94	19.64	22 37 16.6	16.1	10.298	15.90	1 42.51	47.77	8.65	4 57 2.44
6	4 59 27.24	26.97	22 43 26.3	25.9	10.310	14.91	1 31.76	47.66	8.69	5 0 59.00
7	5 3 34.83	34.59	22 49 12.1	11.8	10.321	13.91	1 20.73	47.55	8.73	5 4 55.55
8	5 7 42.68	42.47	22 54 34.0	33.7	10.332	12.91	1 9.44	47.45	8.77	5 8 52.11
9	5 11 50.78	50.60	22 59 31.7	31.5	10.342	11.90	0 57.90	47.35	8.80	5 12 48.67
10	5 15 59.11	58.96	23 4 5.2	5.0	10.351	10.89	0 46.13	47.25	8.83	5 16 45.23
11	5 20 7.65	7.54	23 8 14.3	14.2	10.360	9.87	0 34.15	47.16	8.86	5 20 41.78
12	5 24 16.38	16.31	23 11 59.0	59.0	10.367	8.85	0 21.97	47.07	8.89	5 24 38.34
13	5 28 25.29	25.26	23 15 19.3	19.3	10.374	7.83	-0 9.61	46.98	8.91	5 28 34.90
14	5 32 34.35	34.36	23 18 15.0	15.0	10.380	6.81	-0 2.90	46.90	8.93	5 32 31.46
15	5 36 43.56	43.60	23 20 46.0	46.0	10.386	5.78	0 15.55	46.82	8.95	5 36 28.01
16	5 40 52.88	52.96	23 22 52.3	52.3	10.390	4.75	0 28.32	46.74	8.96	5 40 24.57
17	5 45 2.31	2.43	23 24 33.9	33.9	10.394	3.72	0 41.19	46.67	8.97	5 44 21.13
18	5 49 11.82	11.97	23 25 50.7	50.7	10.397	2.69	0 54.14	46.60	8.98	5 48 17.69
19	5 53 21.38	21.57	23 26 42.7	42.7	10.399	1.65	1 7 14	46.53	8.98	5 52 14.25
20	5 57 30.97	31.20	23 27 9.9	9.9	10.400	0.62	1 20.17	46.47	8.98	5 56 10.81
21	6 1 40.57	40.84	23 27 12.2	12.2	10.400	-0.42	1 33.21	46.41	8.98	6 0 7.36
22	6 5 50.14	50.45	23 26 49.7	49.7	10.398	1.46	1 46.23	46.36	8.97	6 4 3.92
23	6 9 59.68	60.03	23 26 2.4	2.4	10.396	2.49	1 59.21	46.32	8.96	6 8 0.48
24	6 14 9.14	9.52	23 24 50.3	50.2	10.392	3.52	2 12.12	46.28	8.95	6 11 57.04
25	6 18 18.50	18.92	23 23 13.4	13.2	10.387	4.55	2 24.93	46.24	8.93	6 15 53.59
26	6 22 27.73	28.18	23 21 11.8	11.6	10.381	5.58	2 37.60	46.21	8.91	6 19 50.15
27	6 26 36.81	37.30	23 18 45.6	45.3	10.374	6.60	2 50.12	46.19	8.89	6 23 46.71
28	6 30 45.71	46.23	23 15 54.9	54.5	10.366	7.62	3 2.47	46.17	8.86	6 27 43.27
29	6 34 54.41	54.97	23 12 39.7	39.2	10.357	8.64	3 14.61	46.15	8.83	6 31 39.82
30	6 39 2.87	3.47	23 8 60.1	59.5	10.347	9.65	3 26.52	46.14	8.80	6 35 36.38
31	6 43 11.07	11.70	23 4 56.3	55.6	10.336	-10.66	3 38.16	46.14	8.76	6 39 32.94

NOTE.—For Mean interval of Semidiameter passing the Meridian, subtract 0.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		Hourly Motion, Mean Noon.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
1881.										
July 1	h m s	11.70	+23° 4' 56.3	55.6	10.336	-10.66	m s	15' 46.14	m s	h m s
2	6 43 11.07	11.70	23 0 28.3	27.5	10.324	11.67	3 38.16	46.14	8.76	6 39 32.94
3	6 47 18.98	19.64	23 0 28.3	27.5	10.324	11.67	3 49.51	46.14	8.72	6 43 29.50
4	6 51 26.59	27.28	22 55 36.3	35.4	10.311	12.67	4 0 57	46.15	8.68	6 47 26.05
5	6 55 33.88	34.60	22 50 20.4	19.4	10.297	13.66	4 11.30	46.16	8.64	6 51 22.61
6	6 59 40.83	41.58	22 44 40.7	39.6	10.282	14.65	4 21.69	46.18	8.60	6 55 19.17
7	7 3 47.41	48.19	22 38 37.4	36.2	10.266	15.63	4 31.71	46.20	8.55	6 59 15.73
8	7 7 53.61	54.41	22 32 10.5	9.2	10.250	16.61	4 41.36	46.23	8.50	7 3 12.28
9	7 11 59.41	60.24	22 25 20.3	18.8	10.233	17.58	4 50.60	46.26	8.46	7 7 8.84
10	7 16 4.80	5.65	22 18 6.8	5.2	10.216	18.54	4 59.43	46.29	8.38	7 11 5.40
11	7 20 9.76	10.63	22 10 30.3	28.6	10.199	19.49	5 7.83	46.32	8.32	7 15 1.96
12	7 24 14.28	15.17	22 2 31.0	29.2	10.179	20.44	5 15.80	46.36	8.26	7 18 58.51
13	7 28 18.35	19.26	21 54 9.0	7.2	10.160	21.38	5 23.31	46.40	8.20	7 22 55.07
14	7 32 21.96	22.89	21 45 24.4	22.6	10.141	22.32	5 30.36	46.45	8.13	7 26 51.63
15	7 36 25.10	26.05	21 36 17.5	15.4	10.121	23.25	5 36.94	46.50	8.06	7 30 48.19
16	7 40 27.76	28.72	21 26 48.4	46.1	10.101	24.17	5 43.04	46.55	7.99	7 34 44.74
17	7 44 29.93	30.90	21 16 57.4	54.9	10.080	25.08	5 48.65	46.60	7.92	7 38 41.30
18	7 48 31.59	32.58	21 6 44.6	42.0	10.059	25.98	5 53.76	46.66	7.84	7 42 37.85
19	7 52 32.75	33.75	20 56 10.4	7.6	10.038	26.87	5 58.36	46.72	7.77	7 46 34.41
20	7 56 33.39	34.40	20 45 14.7	11.9	10.016	27.76	6 2.43	46.79	7.69	7 50 30.97
21	8 0 33.50	34.51	20 33 58.1	55.2	9.993	28.63	6 5.98	46.86	7.61	7 54 27.53
22	8 4 33.06	34.08	20 22 20.6	17.6	9.970	29.49	6 8.99	46.94	7.53	7 58 24.08
23	8 8 32.07	33.10	20 10 22.6	19.5	9.947	30.34	6 11.45	47.02	7.45	8 2 20.64
24	8 12 30.52	31.55	19 58 4.2	1.1	9.923	31.18	6 13.34	47.10	7.36	8 6 17.19
25	8 16 28.39	29.42	19 45 25.9	22.6	9.899	32.01	6 14.65	47.19	7.28	8 10 13.75
26	8 20 25.68	26.71	19 32 27.7	24.3	9.875	32.83	6 15.38	47.29	7.20	8 14 10.31
27	8 24 22.39	23.42	19 19 10.2	6.7	9.851	33.63	6 15.53	47.39	7.12	8 18 6.87
28	8 28 18.50	19.53	19 5 33.4	29.8	9.826	34.42	6 15.08	47.50	7.03	8 22 3.42
29	8 32 14.01	15.03	18 51 37.8	34.1	9.801	35.20	6 14.03	47.61	6.95	8 25 59.98
30	8 36 8.91	9.92	18 37 32.6	19.9	9.775	35.97	6 12.37	47.73	6.86	8 29 56.53
31	8 40 3.18	4.18	18 22 51.1	47.3	9.749	36.72	6 10.09	47.85	6.77	8 33 53.09
Aug. 1	8 43 56.84	57.83	18 7 60.5	56.7	9.723	37.47	6 7.19	47.98	6.68	8 37 49.64
2	8 47 49.87	50.85	17 52 52.3	48.4	9.697	38.21	6 3.67	48.11	6.59	8 41 46.20
3	8 51 42.28	43.24	17 37 35.5	22.6	9.671	38.93	5 59.52	48.25	6.51	8 45 42.75
4	8 55 34.07	35.01	17 21 43.8	39.8	9.645	39.64	5 54.75	48.39	6.42	8 49 39.31
5	8 59 25.24	26.17	17 5 44.1	40.2	9.620	40.33	5 49.36	48.53	6.33	8 53 35.86
6	9 3 15.80	16.71	16 49 28.0	24.1	9.594	41.01	5 43.36	48.68	6.24	8 57 32.42
7	9 7 5.75	6.64	16 32 55.5	51.6	9.569	41.68	5 36.75	48.83	6.16	9 1 28.98
8	9 10 55.10	55.97	16 16 7.2	3.3	9.544	42.34	5 29.54	48.98	6.08	9 5 25.54
9	9 14 43.85	44.70	15 58 63.0	59.2	9.519	42.99	5 21.72	49.14	6.00	9 9 22.09
10	9 18 32.01	32.84	15 41 43.5	39.7	9.495	43.62	5 13.33	49.30	5.91	9 13 18.65
11	9 22 19.60	20.40	15 24 8.8	5.1	9.471	44.25	5 4.37	49.46	5.83	9 17 15.20
12	9 26 6.63	7.40	15 6 19.3	15.6	9.448	44.87	4 54.85	49.62	5.75	9 21 11.75
13	9 29 53.09	53.84	14 48 15.2	11.5	9.425	45.47	4 44.77	49.79	5.67	9 25 8.30
14	9 33 39.03	39.74	14 29 56.8	53.3	9.403	46.06	4 34.14	49.96	5.59	9 29 4.86
15	9 37 24.42	25.11	14 11 24.6	21.2	9.381	46.63	4 22.98	50.14	5.51	9 33 1.41
16	9 41 9.30	9.96	13 52 38.6	35.3	9.360	47.19	4 11.30	50.31	5.43	9 36 57.97
17	9 44 53.67	54.30	13 33 39.4	36.2	9.339	47.74	3 59.12	50.49	5.36	9 40 54.52
18	9 48 37.55	38.14	13 14 27.1	24.0	9.318	48.28	3 46.44	50.67	5.29	9 44 51.08
19	9 52 20.94	21.49	12 54 62.1	59.2	9.298	48.80	3 33.28	50.86	5.22	9 48 47.63
20	9 56 3.86	4.37	12 35 24.7	21.9	9.278	49.31	3 19.64	51.04	5.15	9 52 44.19
21	9 59 46.31	46.79	12 15 35.2	32.6	9.259	49.81	3 5.54	51.23	5.08	9 56 40.74
22	10 3 28.31	28.75	11 55 34.0	31.6	9.240	50.29	2 50.98	51.42	5.01	10 0 37.30
23	10 7 9.86	10.26	11 35 21.4	19.2	9.222	50.76	2 35.98	51.62	4.95	10 4 33.85
24	10 10 50.98	51.34	11 14 57.7	55.7	9.204	51.21	2 20.54	51.82	4.88	10 8 30.41
25	10 14 31.68	32.00	10 54 23.3	21.5	9.187	51.65	2 4.69	52.03	4.82	10 12 26.96
26	10 18 11.97	12.25	10 33 38.5	36.9	9.170	52.07	1 48.43	52.24	4.76	10 16 23.52
27	10 21 51.86	52.10	10 12 43.7	42.4	9.154	52.48	1 31.77	52.46	4.70	10 20 20.07
28	10 25 31.36	31.56	9 51 39.2	38.1	9.138	52.88	1 14.72	52.68	4.64	10 24 16.62
29	10 29 10.48	10.63	9 30 25.4	24.6	9.122	53.26	0 57.29	52.91	4.58	10 28 13.17
30	10 32 49.23	49.34	9 9 2.5	1.9	9.107	53.63	0 39.50	53.14	4.53	10 32 9.73
31	10 36 27.64	27.70	8 47 31.0	30.7	9.093	53.99	0 21.35	53.37	4.48	10 36 6.28
Aug. 31	10 40 5.71	5.72	+ 8 25 51.1	51.0	9.079	-54.33	+ 0 2.87	15 53.60	1 4.43	10 40 2.84

NOTE.—For Mean interval of Semidiameter passing the Meridian, subtract 0.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		Hourly Motion, Mean Noon.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
1881.	h m s	h m s	h m s	h m s	h m s	h m s	m s	h m s	m s	h m s
Sept. 1	10 43 43.46	43.42	48 4 32	3.4	9.066	54.66	0 15.93	15 53.84	1 4.39	10 43 59.38
2	10 47 20.90	20.81	7 42 7.6	8.1	9.054	54.97	0 35.04	54.08	4.35	10 47 55.94
3	10 50 58.06	57.92	7 20 4.5	5.3	9.042	55.27	0 54.42	54.32	4.31	10 51 52.49
4	10 54 34.95	34.76	6 57 54.4	55.5	9.031	55.56	1 14.08	54.56	4.27	10 55 49.04
5	10 58 11.59	11.35	6 35 37.5	39.0	9.022	55.84	1 33.98	54.81	4.24	10 59 45.59
6	11 1 48.00	47.71	6 13 14.1	15.9	9.013	56.10	1 54.12	55.05	4.21	11 3 42.15
7	11 5 24.21	23.87	5 50 44.6	46.7	9.005	56.35	2 14.46	55.30	4.18	11 7 38.70
8	11 8 60.24	59.85	5 28 9.1	11.5	8.998	56.59	2 34.98	55.55	4.15	11 11 35.25
9	11 12 36.11	35.67	5 5 28.2	31.0	8.992	56.82	2 55.65	55.80	4.13	11 15 31.80
10	11 16 11.84	11.35	4 42 41.9	45.0	8.987	57.03	3 16.46	56.05	4.11	11 19 28.36
11	11 19 47.46	46.92	4 19 50.7	54.2	8.982	57.23	3 37.40	56.30	4.09	11 23 24.91
12	11 23 22.98	22.39	3 56 54.9	58.7	8.979	57.41	3 58.43	56.55	4.08	11 27 21.46
13	11 26 58.43	57.78	3 33 54.7	58.9	8.976	57.58	4 19.52	56.80	4.07	11 31 18.01
14	11 30 33.83	33.13	3 10 50.6	55.1	8.975	57.74	4 40.67	57.05	4.06	11 35 14.57
15	11 34 9.21	8.46	2 47 42.8	47.7	8.974	57.89	5 1.84	57.31	4.05	11 39 11.12
16	11 37 44.58	43.78	2 24 31.7	36.9	8.974	58.02	5 23.02	57.56	4.05	11 43 7.68
17	11 41 19.07	19.11	2 1 17.6	23.2	8.975	58.14	5 44.18	57.82	4.05	11 47 4.23
18	11 44 55.39	54.47	1 38 0.8	6.7	8.977	58.24	6 5.31	58.08	4.06	11 51 0.78
19	11 48 30.85	29.88	1 14 41.7	48.0	8.979	58.33	6 26.39	58.34	4.07	11 54 57.33
20	11 52 6.39	5.37	0 51 20.7	27.3	8.982	58.40	6 47.41	58.60	4.08	11 58 53.89
21	11 55 42.01	40.94	0 27 58.1	65.1	8.986	58.46	7 8.34	58.87	4.09	12 2 50.43
22	11 59 17.74	16.62	0 4 34.3	41.6	8.991	58.51	7 29.15	59.14	4.10	12 6 46.99
23	12 2 53.59	52.42	0 18 50.3	42.7	8.996	58.54	7 49.84	59.41	4.12	12 10 43.54
24	12 6 29.58	28.36	0 42 15.4	7.5	9.002	58.55	8 10.40	59.68	4.14	12 14 40.10
25	12 10 5.72	4.44	1 5 40.7	32.4	9.009	58.55	8 30.81	59.96	4.17	12 18 36.65
26	12 13 42.03	40.70	1 28 65.7	57.1	9.017	58.53	8 51.06	60.24	4.20	12 22 33.21
27	12 17 18.54	17.16	1 52 30.0	21.0	9.025	58.49	9 11.11	60.52	4.23	12 26 29.76
28	12 20 55.25	53.82	2 15 53.4	44.1	9.034	58.44	9 30.94	60.80	4.26	12 30 26.31
29	12 24 32.19	30.70	2 39 15.5	5.9	9.044	58.38	9 50.54	61.08	4.30	12 34 22.86
30	12 28 9.37	7.83	3 2 35.9	26.0	9.055	58.31	10 9.97	61.36	4.34	12 38 19.41
Oct. 1	12 31 46.81	45.22	3 25 54.3	44.1	9.066	58.22	10 29.02	61.65	4.38	12 42 15.96
2	12 35 24.54	22.90	3 48 70.3	59.8	9.078	58.11	10 47.85	61.93	4.43	12 46 12.52
3	12 39 2.57	0.88	4 12 23.6	12.8	9.091	57.99	11 6.36	62.21	4.48	12 50 9.07
4	12 42 40.93	39.19	4 35 33.6	22.6	9.106	57.85	11 24.55	62.48	4.53	12 54 5.62
5	12 46 19.64	17.86	4 58 40.6	29.2	9.121	57.70	11 42.39	62.77	4.59	12 58 2.17
6	12 49 58.72	56.90	5 21 43.7	32.2	9.137	57.54	11 59.87	63.05	4.65	13 1 58.73
7	12 53 38.20	36.33	5 44 42.7	31.0	9.154	57.37	12 16.96	63.33	4.71	13 5 55.28
8	12 57 18.09	16.17	6 7 37.3	25.4	9.172	57.18	12 33.60	63.61	4.77	13 9 51.83
9	13 0 58.44	56.47	6 30 27.0	14.9	9.191	56.97	12 49.80	63.89	4.84	13 13 48.38
10	13 4 39.25	37.24	6 52 71.7	59.3	9.211	56.75	13 5.55	64.16	4.91	13 17 44.94
11	13 8 20.55	18.50	7 15 50.8	38.2	9.232	56.51	13 20.80	64.43	4.98	13 21 41.49
12	13 12 2.36	0.26	7 38 24.1	11.3	9.254	56.26	13 35.54	64.70	5.05	13 25 38.04
13	13 15 44.70	42.56	8 0 51.2	38.3	9.276	56.00	13 49.75	64.97	5.13	13 29 34.59
14	13 19 27.59	25.41	8 22 71.7	58.6	9.299	55.71	14 3.42	65.24	5.21	13 33 31.15
15	13 23 11.05	8.83	8 45 25.1	11.9	9.323	55.41	14 16.52	65.51	5.29	13 37 27.70
16	13 26 55.10	52.84	9 7 31.2	17.9	9.348	55.09	14 29.03	65.78	5.38	13 41 24.26
17	13 30 39.76	37.46	9 29 29.4	16.2	9.374	54.76	14 40.93	66.05	5.47	13 45 20.81
18	13 34 25.04	22.71	9 51 19.6	6.1	9.400	54.41	14 52.20	66.32	5.56	13 49 17.36
19	13 38 10.96	8.60	10 12 61.1	47.5	9.427	54.04	15 2.84	66.58	5.65	13 53 13.91
20	13 41 57.53	55.14	10 34 33.7	20.0	9.454	53.66	15 12.83	66.85	5.74	13 57 10.46
21	13 45 44.77	42.34	10 55 56.8	43.1	9.482	53.26	15 22.15	67.11	5.84	14 1 7.02
22	13 49 32.63	30.22	11 16 70.2	56.5	9.510	52.84	15 30.80	67.38	5.94	14 5 3.58
23	13 53 21.28	18.79	11 37 73.3	59.6	9.539	52.40	15 38.76	67.64	6.04	14 9 0.13
24	13 57 10.57	8.06	11 58 65.8	52.1	9.569	51.95	15 46.03	67.91	6.14	14 12 56.68
25	14 0 60.58	58.04	12 19 47.2	33.6	9.599	51.48	15 52.59	68.17	6.25	14 16 53.23
26	14 4 51.30	48.73	12 40 17.1	3.5	9.629	51.00	15 58.43	68.44	6.35	14 20 49.79
27	14 8 42.74	40.15	13 0 35.2	21.7	9.659	50.50	16 3.55	68.70	6.46	14 24 46.34
28	14 12 34.92	32.31	13 20 41.0	27.6	9.690	49.98	16 7.92	68.96	6.57	14 28 42.90
29	14 16 27.85	25.22	13 40 34.1	20.8	9.721	49.45	16 11.56	69.22	6.68	14 32 39.45
30	14 20 21.54	18.89	14 0 14.1	0.9	9.753	48.89	16 14.44	69.48	6.79	14 36 36.01
31	14 24 15.99	13.33	14 19 40.7	27.6	9.785	48.32	16 16.56	69.74	6.91	14 40 32.56
32	14 28 11.21	8.54	14 38 53.3	40.3	9.818	47.73	16 17.89	69.99	7.02	14 44 29.11

NOTE.—For Mean Interval of Semidiameter passing the Meridian, subtract 0.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		Hourly Motion, Mean Noon.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
1881.										
Nov. 1	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
2	14 28 11.21	8.54	-14 38 53.3	40.3	9.818	-47.73	16 17.89	16 10.00	7.02	14 44 29.11
3	14 32 7.23	4.55	14 57 51.7	38.9	9.851	47.13	16 18.44	10.25	7.14	14 48 25.67
4	14 36 4.05	1.36	15 16 35.4	22.7	9.984	46.51	16 18.19	10.50	7.25	14 52 22.23
5	14 39 61.67	58.98	15 34 64.0	51.5	9.918	45.87	16 17.13	10.74	7.37	14 56 18.78
6	14 43 60.11	57.41	15 53 17.2	4.9	9.952	45.22	16 15.26	10.98	7.48	15 0 15.34
7	14 47 59.38	56.68	16 11 14.5	2.4	9.987	44.55	16 12.55	11.22	7.60	15 4 11.89
8	14 51 59.49	56.79	16 28 55.6	43.7	10.022	43.86	16 9.01	11.45	7.72	15 8 8.45
9	14 55 60.44	57.74	16 46 20.0	8.4	10.057	43.16	16 4.63	11.68	7.84	15 12 5.00
10	14 59 62.24	59.55	17 3 27.3	15.9	10.093	42.44	15 59.38	11.91	7.96	15 16 1.56
11	15 4 4.91	2.23	17 20 17.2	6.1	10.129	41.71	15 53.27	12.13	8.08	15 19 58.11
12	15 8 8.44	5.77	17 36 49.3	38.5	10.165	40.96	15 46.31	12.35	8.20	15 23 54.67
13	15 12 12.83	10.17	17 52 63.2	52.7	10.201	40.19	15 38.48	12.56	8.32	15 27 51.22
14	15 16 18.03	15.45	18 8 58.5	48.3	10.237	39.40	15 29.78	12.77	8.44	15 31 47.78
15	15 20 24.22	21.60	18 24 34.7	24.8	10.273	38.60	15 20.21	12.98	8.56	15 35 44.33
16	15 24 31.22	28.62	18 39 51.5	41.9	10.309	37.78	15 9.77	13.19	8.68	15 39 40.89
17	15 28 39.08	36.50	18 54 48.5	39.3	10.345	36.95	14 58.47	13.39	8.79	15 43 37.44
18	15 32 47.79	45.24	19 9 25.8	16.4	10.381	36.10	14 46.32	13.59	8.91	15 47 34.00
19	15 36 57.35	54.83	19 23 41.4	32.8	10.416	35.23	14 33.33	13.78	9.02	15 51 30.55
20	15 41 7.74	5.25	19 37 36.6	28.3	10.450	34.35	14 19.51	13.97	9.14	15 55 27.11
21	15 45 18.96	16.49	19 51 10.4	2.5	10.484	33.45	14 4.87	14.16	9.25	15 59 23.67
22	15 49 30.97	28.55	20 4 22.5	14.9	10.517	32.54	13 49.41	14.35	9.36	16 3 20.23
23	15 53 43.79	41.41	20 17 12.4	5.2	10.550	31.61	13 33.16	14.53	9.47	16 7 16.78
24	15 57 57.38	55.04	20 29 39.9	33.1	10.582	30.67	13 16.12	14.72	9.58	16 11 13.34
25	16 2 11.74	9.44	20 41 44.5	38.1	10.614	29.71	12 58.31	14.90	9.68	16 15 9.89
26	16 6 26.84	24.59	20 53 26.0	20.0	10.644	28.74	12 39.76	15.08	9.78	16 19 6.45
27	16 10 42.67	40.47	21 4 44.0	38.3	10.674	27.76	12 20.49	15.25	9.88	16 23 3.00
28	16 14 59.20	57.05	21 15 38.3	32.9	10.703	26.75	12 0.52	15.42	9.98	16 26 59.56
29	16 19 16.42	14.33	21 26 8.3	3.3	10.732	25.74	11 39.87	15.59	10.08	16 30 56.12
30	16 23 34.31	32.28	21 36 14.0	9.3	10.759	24.71	11 18.54	15.75	10.18	16 34 52.68
31	16 27 52.85	50.88	21 45 54.8	50.5	10.786	23.68	10 56.55	15.91	10.27	16 38 49.23
Dec. 1	16 32 12.02	10.11	21 55 10.7	6.7	10.812	22.63	10 33.94	16.06	10.36	16 42 45.79
2	16 36 31.81	29.97	22 3 61.3	57.6	10.837	21.58	10 10.72	16.21	10.44	16 46 42.35
3	16 40 52.18	50.41	22 12 26.4	23.0	10.861	20.51	9 46.90	16.36	10.52	16 50 38.91
4	16 45 13.12	11.42	22 20 25.6	22.5	10.884	19.43	9 22.51	16.50	10.60	16 54 35.46
5	16 49 34.61	32.99	22 27 58.8	56.0	10.906	18.34	8 57.57	16.63	10.67	16 58 32.02
6	16 53 56.64	55.09	22 35 5.8	3.3	10.928	17.24	8 32.10	16.76	10.74	17 2 28.58
7	16 58 19.17	17.69	22 41 46.3	44.1	10.948	16.13	8 6.12	16.88	10.81	17 6 25.14
8	17 2 42.18	40.78	22 47 59.9	58.0	10.968	15.01	7 39.66	17.00	10.87	17 10 21.69
9	17 7 5.65	4.33	22 53 46.7	45.1	10.987	13.88	7 12.74	17.11	10.93	17 14 18.25
10	17 11 20.56	28.32	22 59 6.4	5.0	11.005	12.75	6 45.38	17.21	10.98	17 18 14.80
11	17 15 53.87	52.72	23 3 58.8	57.6	11.022	11.61	6 17.62	17.31	11.03	17 22 11.36
12	17 20 18.58	17.51	23 8 23.7	22.7	11.037	10.46	5 49.46	17.41	11.08	17 26 7.92
13	17 24 43.63	42.64	23 12 21.0	20.2	11.051	9.31	5 20.96	17.50	11.12	17 30 4.48
14	17 29 9.00	8.10	23 15 50.5	49.8	11.063	8.15	4 52.13	17.58	11.16	17 34 1.03
15	17 33 34.65	33.84	23 18 52.1	51.6	11.074	6.99	4 23.03	17.66	11.19	17 37 57.59
16	17 37 60.54	59.82	23 21 25.8	25.4	11.084	5.82	3 53.69	17.74	11.22	17 41 54.15
17	17 42 26.65	26.02	23 23 31.4	31.1	11.092	4.65	3 24.13	17.81	11.24	17 45 50.71
18	17 46 52.94	52.40	23 25 8.9	8.6	11.098	3.47	2 54.39	17.88	11.26	17 49 47.27
19	17 51 19.37	18.92	23 26 18.1	17.9	11.103	2.30	2 24.51	17.94	11.28	17 53 43.83
20	17 55 45.91	45.55	23 26 59.1	59.0	11.107	1.12	1 54.51	18.00	11.29	17 57 40.38
21	18 0 12.51	12.24	23 27 11.8	11.8	11.109	0.05	1 24.46	18.06	11.30	18 1 36.94
22	18 4 39.14	38.97	23 26 56.2	56.2	11.109	1.23	0 54.39	18.11	11.30	18 5 33.50
23	18 9 5.75	5.67	23 26 12.3	12.3	11.108	2.41	0 24.32	18.16	11.30	18 9 30.06
24	18 13 32.30	32.31	23 25 0.1	0.1	11.105	3.59	0 5.69	18.20	11.29	18 13 26.61
25	18 17 58.76	58.86	23 23 19.8	19.7	11.100	4.77	0 35.60	18.24	11.28	18 17 23.17
26	18 22 25.10	25.30	23 21 11.2	11.1	11.094	5.94	1 5.39	18.28	11.26	18 21 19.73
27	18 26 51.27	51.56	23 18 34.5	34.3	11.087	7.11	1 35.01	18.31	11.24	18 25 16.29
28	18 31 17.25	17.63	23 15 29.9	29.6	11.078	8.27	2 4.45	18.34	11.21	18 29 12.84
29	18 35 42.99	43.46	23 11 57.4	57.0	11.068	9.44	2 33.64	18.36	11.18	18 33 9.40
30	18 40 8.47	9.03	23 7 56.9	56.4	11.056	10.60	3 2.57	18.37	11.14	18 37 5.96
31	18 44 33.65	34.30	23 3 28.7	28.1	11.043	11.75	3 31.20	18.38	11.10	18 41 2.52
32	18 48 58.51	59.24	22 58 32.9	32.1	11.029	12.90	3 59.51	16 18.39	11.06	18 44 59.07

NOTE.—For Mean interval of Semidiameter passing the Meridian, subtract 0.19 from the Sidereal Interval.

332 MOON-CULMINATIONS, 1881.

WASHINGTON MERIDIAN.											
Date. 1881.	Mean Time of Meridian Transit.	Diff. for 1 h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.	Date. 1881.	Mean Time of Meridian Transit.	Diff. for 1 h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
Jan. 1	h m	m	s		I.	Mar. 1	h m	m	s		I.
2	1 13.52	2.492	73.36		I.	2	1 7.99	2.087	67.16		I.
3	2 11.17	2.314	70.79		I.	3	1 57.79	2.070	66.96		I.
4	3 4.72	2.155	68.46		I.	4	2 47.52	2.077	67.15		I.
5	3 54.94	2.038	66.72		I.	5	3 37.58	2.094	67.48		I.
6	4 42.92	1.969	65.67	215 .. 1	I.	6	4 28.03	2.108	67.76	24 .. 30	I.
7	5 29.79	1.944	65.28	3 .. 7	I.	7	5 18.66	2.107	67.77	33 .. 38	I.
8	6 16.48	1.952	65.44	7 .. 10	I.	8	6 8.98	2.082	67.40	41 .. 46	I.
9	7 3.68	1.985	65.95	14 .. 17	I.	9	6 58.43	2.036	66.66	51 .. 55	I.
10	7 51.83	2.029	66.55	18 .. 21	I.	10	7 46.58	1.975	65.65	56 .. 60	I.
11	8 40.98	2.061	66.98	31 .. 36	I.	11	8 33.19	1.910	64.54	62 .. 66	I.
12	9 30.58	2.067	67.04	40 .. 43	I.	12	9 18.31	1.853	63.55	69 .. 75	I.
13	10 20.01	2.047	66.64	48 .. 51	I.	13	10 2.27	1.814	62.85	76 .. 82	I.
14	11 8.61	1.998	65.82	55 .. 58	I.	14	10 45.58	1.800	62.57	84 .. 88	I.
15	11 55.77	1.931	64.73	59 .. 63	I.	15	11 28.92	1.817	62.81	92 .. 96	I.
16	12 41.27	1.861	63.61	68 .. 72	II.	16	12 13.06	1.867	63.60	98 .. 101	I.
17	13 25.20	1.803	62.69	76 .. 79	II.	17	12 58.82	1.951	64.96	103 .. 106	II.
18	14 7.97	1.767	62.15	82 .. 86	II.	18	13 46.95	2.065	66.79	109 .. 112	II.
19	14 50.25	1.763	62.14	89 .. 93	II.	19	14 38.06	2.196	68.87	114 .. 118	II.
20	15 32.89	1.796	62.75	96 .. 100	II.	20	15 32.38	2.327	70.88	119 .. 124	II.
21	16 16.80	1.871	64.05	100 .. 104	II.	21	16 29.52	2.426	72.40	134 .. 140	II.
22	17 3.04	1.990	65.99	106 .. 109	II.	22	17 28.40	2.468	73.06	150 .. 155	II.
23	17 52.62	2.148	68.46	111 .. 115	II.	23	18 27.52	2.446	72.72	165 .. 169	II.
24	18 46.33	2.329	71.17	117 .. 120	II.	24	19 25.44	2.372	71.60	182 .. 186	II.
25	19 44.33	2.499	73.61	130 .. 135	II.	25	20 21.19	2.274	70.11		II.
26	20 45.84	2.612	75.17		II.	26	21 14.60	2.181	68.64		II.
27	21 49.01	2.633	75.40		II.	27	22 6.03	2.111	67.51		II.
28	22 51.53	2.561	74.31		II.	28	22 56.16	2.073	66.87		II.
29	23 51.49	2.430	72.39		II.	29	23 45.77	2.066	66.74		II.
30	0 48.04	2.285	70.27		I.	30	0 35.52	2.083	67.03		I.
31	1 41.32	2.161	68.43		I.	31	1 25.88	2.115	67.52		I.
Feb. 1	2 32.05	2.074	67.14		I.	Apr. 1	2 16.98	2.140	67.97		I.
2	3 21.16	2.026	66.47		I.	2	3 8.46	2.146	68.16		I.
3	4 9.57	2.013	66.32	6 .. 9	I.	3	3 59.77	2.125	67.91		I.
4	4 58.00	2.025	66.55	12 .. 16	I.	4	4 50.26	2.077	67.20	47 .. 51	I.
5	5 46.87	2.048	66.94	19 .. 24	I.	5	5 39.32	2.008	66.16	55 .. 58	I.
6	6 36.28	2.068	67.26	28 .. 33	I.	6	6 26.60	1.932	64.97	59 .. 62	I.
7	7 26.03	2.073	67.29	37 .. 41	I.	7	6 12.14	1.865	63.85	67 .. 71	I.
8	8 15.61	2.054	66.93	44 .. 49	I.	8	7 56.28	1.816	63.01	76 .. 80	I.
9	9 4.46	2.013	66.19	54 .. 58	I.	9	8 39.54	1.794	62.59	80 .. 84	I.
10	9 52.10	1.954	65.18	56 .. 61	I.	10	9 22.68	1.806	62.70	88 .. 92	I.
11	10 38.21	1.890	64.11	66 .. 70	I.	11	10 6.51	1.855	63.41	96 .. 99	I.
12	11 22.87	1.834	63.15	74 .. 77	I.	12	10 51.93	1.940	64.73	100 .. 103	I.
13	12 6.39	1.796	62.50	79 .. 84	I.	13	11 39.81	2.057	66.57	106 .. 109	I.
14	12 49.28	1.783	62.30	85 .. 90	II.	14	12 30.84	2.199	68.73	112 .. 115	II.
15	13 32.22	1.802	62.66	93 .. 97	II.	15	13 25.34	2.342	70.88	117 .. 121	II.
16	14 16.04	1.857	63.58	99 .. 103	II.	16	14 22.96	2.453	72.58	130 .. 135	II.
17	15 1.61	1.948	65.11	104 .. 108	II.	17	15 22.57	2.501	73.37	145 .. 150	II.
18	15 49.78	2.072	67.13	110 .. 113	II.	18	16 22.46	2.476	73.04	161 .. 166	II.
19	16 41.23	2.218	69.41	115 .. 119	II.	19	17 20.94	2.389	71.81	180 .. 184	II.
20	17 36.25	2.364	71.62	124 .. 128	II.	20	18 16.89	2.273	70.10	187 .. 190	II.
21	18 34.44	2.477	73.27	139 .. 143	II.	21	19 10.06	2.162	68.39	195 .. 200	II.
22	19 34.66	2.527	73.96	155 .. 158	II.	22	20 0.83	2.076	67.05	202 .. 206	II.
23	20 35.18	2.503	73.56		II.	23	20 49.99	2.027	66.24		II.
24	21 34.38	2.422	72.28		II.	24	21 38.44	2.017	66.00		II.
25	22 31.21	2.313	70.64		II.	25	22 27.04	2.037	66.27		II.
26	23 25.44	2.210	69.05		II.	26	23 16.39	2.078	66.87		II.
27	0 17.46	2.131	67.85		I.	27	0 6.81	2.123	67.54		I.
28	1 7.99	2.087	67.16		I.	28	0 58.16	2.153	68.02		I.
29	1 57.79	2.070	66.96		I.	29	1 49.90	2.153	68.09		I.
30	2 47.52	2.077	67.15		I.	30	2 41.21	2.117	67.61		I.
31						31					

NOTE.—The numbers in the columns of Stars indicate those Stars in the Catalogue on pp. 335-338, which are within 30° of the Moon in right ascension. The nearest in declination, if sufficiently bright to be observed, are preferable.

MOON-CULMINATIONS, 1881. 333

WASHINGTON MERIDIAN.											
Date. 1881.	Mean Time of Meridian Transit.	Diff. for 1 h. of Long.	Sidereal Time of Semi- passing Merid.	Stars.	Bright Limb.	Date. 1881.	Mean Time of Meridian Transit.	Diff. for 1 h. of Long.	Sidereal Time of Semi- passing Merid.	Stars.	Bright Limb.
	h m	m	s				h m	m	s		
May 1	2 41.21	2.117	67.61		I.	July 1	3 50.03	1.728	61.48	87 .. 90	I.
2	3 31.29	2.052	66.65		I.	2	4 31.68	1.748	61.86	93 .. 97	I.
3	4 19.55	1.968	65.42	57 .. 60	I.	3	5 14.30	1.810	62.91	99 .. 102	I.
4	5 5.77	1.896	64.16	64 .. 68	I.	4	5 58.92	1.016	64.65	104 .. 108	I.
5	5 50.20	1.820	63.10	71 .. 76	I.	5	6 46.60	2.065	66.95	110 .. 113	I.
6	6 33.33	1.779	62.43	78 .. 82	I.	6	7 38.25	2.244	69.65	114 .. 118	I.
7	7 15.87	1.773	62.30	85 .. 90	I.	7	8 34.32	2.472	72.31	123 .. 126	I.
8	7 58.74	1.806	62.80	92 .. 97	I.	8	9 34.45	2.573	74.34	137 .. 143	I.
9	8 42.88	1.880	63.94	98 .. 101	I.	9	10 37.18	2.636	75.19	154 .. 159	I.
10	9 29.31	1.996	65.71	103 .. 107	I.	10	11 40.26	2.603	74.69	173 .. 178	I.
11	10 18.95	2.148	68.01	109 .. 113	I.	11	12 41.53	2.493	73.13	186 .. 190	I.
12	11 12.53	2.317	70.51	114 .. 118	I.	12	13 39.70	2.353	71.12	195 .. 198	II.
13	12 10.02	2.469	72.74	123 .. 126	I.	13	14 34.55	2.222	69.23	202 .. 206	II.
14	13 10.59	2.565	74.14	137 .. 142	II.	14	15 26.61	2.124	67.79	208 .. 212	II.
15	14 12.45	2.571	74.27	154 .. 158	II.	15	16 16.82	2.067	66.95	217 .. 2	II.
16	15 13.36	2.492	73.18	172 .. 176	II.	16	17 6.11	2.047	66.67	4 .. 8	II.
17	16 11.65	2.361	71.34	186 .. 189	II.	17	17 55.28	2.055	66.81	8 .. 14	II.
18	17 6.58	2.220	69.28	194 .. 197	II.	18	18 44.87	2.079	67.16	16 .. 20	II.
19	17 58.36	2.102	67.51	200 .. 204	II.	19	19 35.05	2.101	67.47	24 .. 31	II.
20	18 47.78	2.024	66.27	206 .. 209	II.	20	20 25.60	2.107	67.50		II.
21	19 35.83	1.988	65.68	215 .. 1	II.	21	21 15.97	2.087	67.12		II.
22	20 23.50	1.991	65.68		II.	22	22 5.54	2.038	66.30		II.
23	21 11.62	2.024	66.13		II.	23	22 53.66	1.969	65.16		II.
24	22 0.76	2.073	66.82		II.	24	23 40.00	1.892	63.90		II.
25	22 51.07	2.118	67.48		II.	25	0 24.50	1.819	62.72		I.
26	23 42.24	2.141	67.82		II.	26	1 7.43	1.763	61.83		I.
27	0 33.58	2.130	67.66		I.	27	1 49.31	1.732	61.36		I.
28	1 24.18	2.081	66.94		I.	28	2 30.81	1.731	61.41		I.
29	2 13.26	2.004	65.80		I.	29	3 12.74	1.767	62.05		I.
30	3 0.31	1.918	64.49		I.	30	3 55.96	1.843	63.34	102 .. 106	I.
June 1	3 45.38	1.838	63.26		I.	Aug. 1	4 41.45	1.955	65.20	107 .. 110	I.
2	4 28.71	1.777	62.33	76 .. 80	I.	2	5 30.06	2.102	67.53	114 .. 118	I.
3	5 10.92	1.747	61.88	82 .. 86	I.	3	6 22.47	2.268	70.03	118 .. 124	I.
4	5 52.86	1.754	62.01	89 .. 93	I.	4	7 18.84	2.426	72.32	131 .. 137	I.
5	6 35.47	1.803	62.80	96 .. 100	I.	5	8 18.54	2.537	73.88	147 .. 151	I.
6	7 19.77	1.896	64.29	100 .. 104	I.	6	9 20.07	2.575	74.36	164 .. 167	I.
7	8 6.84	2.035	66.43	106 .. 109	I.	7	10 21.55	2.534	73.71	182 .. 185	I.
8	8 57.70	2.209	69.03	112 .. 115	I.	8	11 21.29	2.440	72.31	180 .. 194	I.
9	9 52.95	2.395	71.74	117 .. 121	I.	9	12 18.51	2.329	70.69	198 .. 202	I.
10	10 52.42	2.552	73.98	131 .. 135	I.	10	13 13.17	2.231	69.26	206 .. 209	II.
11	11 54.85	2.632	75.09	147 .. 151	I.	11	14 5.83	2.163	68.27	214 .. 217	II.
12	12 58.01	2.612	74.81	164 .. 167	II.	12	14 57.24	2.127	67.78	2 .. 6	II.
13	13 59.56	2.505	73.33	182 .. 185	II.	13	15 48.14	2.118	67.70	6 .. 9	II.
14	14 57.91	2.355	71.20	190 .. 194	II.	14	16 39.04	2.125	67.85	14 .. 18	II.
15	15 52.63	2.208	69.09	198 .. 202	II.	15	17 30.16	2.134	68.01	23 .. 26	II.
16	16 44.19	2.095	67.39	205 .. 208	II.	16	18 21.38	2.130	67.93	32 .. 36	II.
17	17 33.53	2.025	66.31	210 .. 215	II.	17	19 12.23	2.104	67.52	40 .. 44	II.
18	18 21.71	1.996	65.88	218 .. 4	II.	18	20 2.21	2.056	66.72	46 .. 55	II.
19	19 9.65	2.005	66.00	6 .. 9	II.	19	20 50.78	1.989	65.50		II.
20	19 58.15	2.039	66.46	12 .. 16	II.	20	21 37.61	1.914	64.33		II.
21	20 47.57	2.080	67.04		II.	21	22 22.67	1.843	63.13		II.
22	21 37.90	2.111	67.47		II.	22	23 6.18	1.786	62.16		II.
23	22 28.69	2.116	67.50		II.	23	23 48.57	1.751	61.55		II.
24	23 19.22	2.088	67.03		II.	24	0 30.44	1.742	61.42		I.
25	0 8.69	2.028	66.09		II.	25	1 12.44	1.764	61.82		I.
26	0 56.43	1.948	64.84		I.	26	1 55.40	1.820	62.77		I.
27	1 42.18	1.865	63.54		I.	27	2 40.08	1.908	64.27		I.
28	2 26.04	1.793	62.44		I.	28	3 27.23	2.025	66.18		I.
29	3 8.44	1.745	61.71		I.	29	4 17.45	2.163	68.34	117 .. 120	I.
30	3 50.03	1.728	61.48	87 .. 90	I.	30	5 11.03	2.299	70.43	125 .. 129	I.
31						31					

NOTE.—The numbers in the columns of Stars indicate those Stars in the Catalogue on pp. 335-338, which are within 30" of the Moon in right ascension. The nearest in declination, if sufficiently bright to be observed, are preferable.

WASHINGTON MERIDIAN.

Date. 1881.	Mean Time of Meridian Transit.	Diff. for 1 h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.	Date. 1881.	Mean Time of Meridian Transit.	Diff. for 1 h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
Sept. 1	h m 7.61	m 2.410	s 72.06	139 .. 144	I.	Nov. 1	h m 8 20.77	m 2.097	s 67.13	209 .. 212	I.
2	7 6.31	2.470	72.91	155 .. 161	I.	2	9 11.14	2.106	67.19	217 .. 2	I.
3	8 5.70	2.468	72.84	173 .. 180	I.	3	10 2.05	2.141	67.68	4 .. 8	I.
4	9 4.41	2.418	72.03	186 .. 189	I.	4	10 54.01	2.190	68.38	11 .. 15	I.
5	10 1.55	2.342	70.85	194 .. 198	I.	5	11 47.12	2.232	69.02	18 .. 24	I.
6	10 56.83	2.267	69.69	202 .. 205	I.	6	12 40.95	2.248	69.28	28 .. 35	II.
7	11 50.53	2.213	68.86	208 .. 212	I.	7	13 34.75	2.225	68.95	38 .. 41	II.
8	12 43.23	2.184	68.45	217 .. 2	II.	8	14 27.42	2.158	68.02	47 .. 51	II.
9	13 35.52	2.178	68.41	4 .. 8	II.	9	15 18.11	2.063	66.64	55 .. 58	II.
10	14 27.89	2.187	68.57	11 .. 15	II.	10	16 6.37	1.959	65.08	59 .. 62	II.
11	15 20.47	2.194	68.77	18 .. 21	II.	11	16 52.21	1.863	63.59	67 .. 71	II.
12	16 13.10	2.187	68.72	28 .. 32	II.	12	17 35.99	1.790	62.41	76 .. 79	II.
13	17 5.31	2.157	68.29	38 .. 41	II.	13	18 18.36	1.747	61.62	80 .. 85	II.
14	17 56.46	2.101	67.44	46 .. 50	II.	14	19 0.10	1.739	61.55	88 .. 92	II.
15	18 46.01	2.026	66.27	54 .. 58	II.	15	19 42.14	1.770	62.02	95 .. 99	II.
16	19 33.65	1.943	64.94	58 .. 62	II.	16	20 25.40	1.841	63.11		II.
17	20 19.35	1.866	63.64		II.	17	21 10.81	1.950	64.78		II.
18	21 3.35	1.805	62.56		II.	18	21 59.21	2.089	66.89		II.
19	21 46.16	1.766	61.85		II.	19	22 51.16	2.241	69.15		II.
20	22 28.34	1.754	61.60		II.	20	23 46.66	2.378	71.16		II.
21	23 10.60	1.773	61.86		II.	22	0 44.95	2.467	72.47		I.
22	23 53.69	1.823	62.66		II.	23	1 44.55	2.484	72.77		I.
24	0 38.35	1.903	63.98		I.	24	2 43.65	2.430	72.04		I.
25	1 25.25	2.010	65.70		I.	25	3 40.83	2.330	70.64		I.
26	2 14.92	2.131	67.64		I.	26	4 35.41	2.221	69.06	194 .. 197	I.
27	3 7.51	2.252	69.52		I.	27	5 27.55	2.129	67.71	200 .. 204	I.
28	4 2.81	2.348	71.00	136 .. 140	I.	28	6 17.87	2.072	66.84	206 .. 210	I.
29	4 59.87	2.398	71.80	151 .. 155	I.	29	7 7.29	2.053	66.52	215 .. 1	I.
30	5 57.52	2.397	71.79	165 .. 169	I.	30	7 56.72	2.072	66.73	3 .. 7	I.
Oct. 1	6 54.58	2.352	71.10	183 .. 186	I.	Dec. 1	8 46.93	2.115	67.34	7 .. 12	I.
2	7 50.27	2.287	70.09	191 .. 194	I.	2	9 38.33	2.168	68.10	15 .. 19	I.
3	8 44.36	2.225	69.08	199 .. 203	I.	3	10 30.92	2.210	68.68	24 .. 30	I.
4	9 37.14	2.180	68.35	205 .. 209	I.	4	11 24.15	2.219	68.79	33 .. 41	I.
5	10 29.21	2.164	68.05	212 .. 215	I.	5	12 17.13	2.187	68.30	42 .. 46	I.
6	11 21.18	2.173	68.18	2 .. 6	I.	6	13 8.82	2.114	67.22	51 .. 57	II.
7	12 13.62	2.200	68.59	6 .. 9	I.	7	13 58.43	2.017	65.77	57 .. 61	II.
8	13 6.77	2.228	69.05	14 .. 17	II.	8	14 45.58	1.914	64.21	64 .. 69	II.
9	14 0.45	2.240	69.29	24 .. 28	II.	9	15 30.38	1.823	62.81	72 .. 76	II.
10	14 54.09	2.223	69.09	31 .. 38	II.	10	16 13.27	1.757	61.79	78 .. 83	II.
11	15 46.88	2.170	68.36	41 .. 45	II.	11	16 54.97	1.724	61.29	86 .. 90	II.
12	16 38.05	2.090	67.18	52 .. 56	II.	12	17 36.32	1.728	61.38	92 .. 98	II.
13	17 27.08	1.995	65.74	57 .. 60	II.	13	18 18.25	1.772	62.12	98 .. 101	II.
14	18 13.83	1.903	64.28	62 .. 66	II.	14	19 1.73	1.857	63.50	103 .. 107	II.
15	18 58.53	1.826	63.02	70 .. 75	II.	15	19 47.71	1.983	65.44	109 .. 113	II.
16	19 41.67	1.774	62.12	76 .. 82	II.	16	20 37.15	2.141	67.81		II.
17	20 23.92	1.752	61.69		II.	17	21 30.54	2.308	70.26		II.
18	21 6.05	1.764	61.81		II.	18	22 27.76	2.450	72.32		II.
19	21 48.89	1.811	62.51		II.	19	23 27.81	2.537	73.50		II.
20	22 33.25	1.891	63.76		II.	21	0 28.90	2.537	73.50		I.
21	23 19.90	2.002	65.48		II.	22	1 29.05	2.464	72.48		I.
23	0 9.48	2.132	67.47		I.	23	2 26.87	2.351	70.87		I.
24	1 2.20	2.259	69.45		I.	24	3 21.84	2.233	69.19		I.
25	1 57.71	2.360	71.00		I.	25	4 14.24	2.141	67.85	205 .. 209	I.
26	2 55.12	2.412	71.81		I.	26	5 4.87	2.086	67.04	211 .. 215	I.
27	3 53.03	2.403	71.73		I.	27	5 54.64	2.069	66.80	1 .. 6	I.
28	4 50.09	2.345	70.93	189 .. 184	I.	28	6 44.42	2.084	67.03	6 .. 9	I.
29	5 45.38	2.262	69.72	187 .. 191	I.	29	7 34.84	2.119	67.53	14 .. 18	I.
30	6 38.65	2.181	68.49	195 .. 200	I.	30	8 26.17	2.157	68.05	20 .. 25	I.
31	7 30.22	2.122	67.57	203 .. 207	I.	31	9 18.26	2.179	68.31	31 .. 36	I.
32	8 20.77	2.097	67.13	209 .. 212	I.	32	10 10.53	2.170	68.10	39 .. 43	I.

NOTE.—The numbers in the columns of Stars indicate those Stars in the Catalogue on pp. 335-338, which are within 30" of the Moon in right ascension. The nearest in declination, if sufficiently bright to be observed, are preferable.

MEAN PLACES FOR 1881.0.

No.	Name.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
1	35 Piscium, <i>pr.</i>	6	h m s 0 8 51.07	+3.085	+ 8 9 35.8	+20.01
2	d Piscium	5½	0 14 28.50	3.081	7 31 45.5	20.02
3	45 Piscium	6	0 19 33.79	3.087	7 1 59.9	19.93
4	51 Piscium	6½	0 26 15.41	3.090	6 17 52.8	19.92
5	B. A. C. 177	7	0 35 3.58	3.102	8 42 25.8	19.82
6	Yar. 529	6½	0 56 18.00	+3.118	+ 8 10 54.8	+19.46
7	75 Piscium	6	1 0 18.06	3.152	12 19 5.0	19.44
8	η Piscium	3½	1 25 7.01	3.201	14 43 54.8	18.68
9	101 Piscium	6	1 29 24.71	3.199	14 3 8.9	18.53
10	104 Piscium	6½	1 32 52.94	3.207	13 40 57.2	18.44
11	B. A. C. 524	6½	1 36 2.36	+3.218	+15 10 37.8	+18.32
12	4 Arietis	6	1 41 43.76	3.246	16 21 46.3	18.16
13	ι Arietis	6	1 50 51.02	3.267	17 14 8.7	17.71
14	B. A. C. 632	6	1 57 11.43	3.287	17 40 56.6	17.52
15	19 Arietis	6	2 6 33.90	3.262	14 43 17.0	17.05
16	26 Arietis	6	2 23 58.06	+3.351	+19 19 35.6	+16.20
17	B. A. C. 782	6½	2 26 57.52	3.345	18 21 18.4	16.11
18	μ Arietis	5½	2 35 39.49	3.372	19 30 12.1	15.55
19	40 Arietis	6	2 41 51.92	3.353	17 47 13.5	15.22
20	ρ Arietis	6	2 49 43.19	3.377	17 32 51.9	14.60
21	47 Arietis	6	2 51 16.63	+3.421	+20 11 24.6	+14.67
22	54 Arietis	6½	3 1 36.45	3.390	18 20 13.7	14.06
23	δ Arietis	4½	3 4 49.53	3.420	19 16 32.2	13.88
24	ζ Arietis	4½	3 8 3.77	3.438	20 36 8.5	13.59
25	B. A. C. 1032	6½	3 14 1.28	3.445	20 4 37.6	13.18
26	τ Arietis	6	3 15 54.42	+3.442	+20 18 54.4	+13.14
27	66 Arietis	6½	3 21 29.24	3.496	22 23 34.0	12.65
28	B. A. C. 1096	6½	3 27 20.29	3.380	17 26 28.6	12.00
29	B. A. C. 1143	7	3 37 32.55	3.476	20 32 58.2	11.55
30	B. A. C. 1171	6½	3 41 17.48	3.564	23 3 6.8	11.37
31	32 Tauri	6	3 49 50.29	+3.536	+22 8 4.3	+10.64
32	36 Tauri	6½	3 57 14.61	3.580	23 46 40.7	10.23
33	Α Tauri	6	3 58 17.40	3.545	21 41 14.6	10.04
34	B. A. C. 1289	7	4 5 47.96	3.550	22 6 28.6	9.63
35	53 Tauri	6½	4 12 25.31	3.529	20 51 10.8	9.02
36	62 Tauri, 2 nd star	6	4 16 49.34	+3.611	+24 1 22.2	+ 8.70
37	κ Tauri	6½	4 18 19.79	3.567	21 55 34.8	8.55
38	ν Tauri	6	4 20 10.52	3.580	22 43 35.6	8.44
39	Rumk. 1250	6½	4 35 3.65	3.595	22 42 46.3	7.21
40	B. A. C. 1518	6	4 40 0.69	3.648	24 24 2.5	6.10
41	ι Tauri	5	4 55 59.00	+3.581	+21 25 6.2	+ 5.47
42	105 Tauri	6	5 0 48.49	3.582	21 32 44.6	5.10
43	π Tauri	6	5 12 7.75	3.602	21 58 23.5	4.20
44	ο Tauri	6	5 20 29.30	3.601	21 50 1.4	3.42
45	121 Tauri	6	5 28 11.10	3.661	23 57 31.3	2.74
46	ζ Tauri	3	5 30 32.02	+3.583	+21 4 5.9	+ 2.53
47	B. A. C. 1774	6½	5 32 1.29	3.644	23 15 12.1	2.41
48	B. A. C. 1801	6	5 36 5.90	3.641	23 8 49.3	2.08
49	B. A. C. 1835	6½	5 41 16.12	3.573	20 49 32.4	1.52
50	141 Tauri	6	5 54 30.43	3.621	22 23 44.8	+ 0.45
51	2 Geminorum	6	5 59 33.36	+3.658	+23 38 51.7	- 0.03
52	3 Geminorum	6	6 2 30.34	3.643	23 7 51.9	0.24
53	6 Geminorum	6	6 5 6.26	3.637	22 56 2.2	0.45
54	η Geminorum	3½	6 7 41.69	3.623	22 32 23.2	0.69
55	μ GEMINORUM	3	6 15 45.69	+3.632	+22 34 23.0	- 1.50

NOTE.—The names printed in small capitals are of Standard Stars, whose apparent places are given in pp. 275—325.

MEAN PLACES FOR 1881.0.

No.	Name.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
56	16 Geminorum	6	^h 6 ^m 20 ^s 52.05	+3.572	+20 33 67.7	- 1.87
57	<i>d</i> Geminorum	6	6 44 25.37	3.606	21 54 2.1	3.89
58	<i>ζ</i> Geminorum	4	6 57 3.06	3.563	20 44 36.1	4.96
59	B. A. C. 2432	6½	7 16 10.16	3.497	18 29 59.8	6.68
60	Yar. 3052	6	7 24 56.51	3.461	17 20 25.7	7.25
61	<i>f</i> Geminorum	6	7 32 36.27	+3.469	+17 56 39.1	- 7.98
62	<i>g</i> Geminorum	5½	7 39 14.05	3.482	18 47 56.5	8.47
63	B. A. C. 2605	6	7 45 1.55	3.487	19 37 42.1	8.96
64	1 Cancri	6	7 50 14.06	3.417	16 6 26.9	9.29
65	5 Cancri	6	7 54 43.37	3.430	16 46 55.3	9.63
66	B. A. C. 2683	6	7 57 52.59	+3.477	+19 10 38.3	- 9.86
67	B. A. C. 2731	6½	8 3 13.33	3.430	17 21 51.7	10.33
68	<i>ζ</i> ¹ Cancri	4½	8 5 23.15	3.447	18 0 17.4	10.57
69	<i>d</i> ² Cancri	6	8 19 5.64	3.403	17 26 14.1	11.58
70	B. A. C. 2872	6½	8 27 9.32	3.325	13 39 51.6	12.01
71	A ¹ Cancri	6	8 36 38.82	+3.313	+13 6 23.4	-12.07
72	A ² Cancri	6	8 40 24.63	3.297	12 32 44.5	12.97
73	54 Cancri	6½	8 44 23.75	3.349	15 47 27.3	13.12
74	60 Cancri	6	8 49 25.70	3.226	12 4 47.1	13.53
75	<i>a</i> Cancri	4	8 51 58.62	3.286	12 19 2.7	13.72
76	<i>κ</i> Cancri	5	9 1 18.08	+3.257	+11 8 46.4	-14.26
77	B. A. C. 3122	6½	9 3 18.21	3.267	12 2 52.6	14.52
78	<i>ω</i> Leonis	6	9 22 5.04	3.219	9 34 27.0	15.49
79	<i>h</i> Leonis	6	9 25 34.87	3.226	10 14 22.9	15.69
80	<i>o</i> Leonis	3½	9 34 47.92	3.207	10 25 58.5	16.20
81	Weisse 1X, 1035 . . .	7	9 49 37.68	+3.175	+ 8 14 30.0	-16.92
82	<i>π</i> Leonis	5	9 53 55.46	3.175	8 36 52.1	17.12
83	Lal. 19679	6½	9 58 34.57	3.136	5 34 51.6	17.31
84	14 Sextantis	6	10 0 34.12	3.140	6 11 28.9	17.40
85	16 Sextantis	6	10 3 0.75	3.152	6 45 12.6	17.52
86	19 Sextantis	7	10 6 36.75	+3.124	+ 5 12 7.3	-17.68
87	B. A. C. 3529	6	10 14 18.67	3.144	7 1 45.2	17.96
88	Weisse X, 315	6½	10 19 58.67	3.116	4 32 13.7	18.21
89	34 Sextantis	6	10 36 28.72	3.099	4 12 15.0	18.72
90	36 Sextantis	6	10 39 1.55	3.091	3 6 49.1	18.82
91	B. A. C. 3726	6	10 46 6.88	+3.083	+ 1 39 30.4	-19.02
92	55 Leonis	6	10 49 35.06	3.089	+ 1 22 15.4	19.13
93	B. A. C. 3779	6	10 57 8.34	3.071	- 0 6 37.1	19.61
94	<i>p</i> ⁴ Leonis	7	11 3 9.49	3.071	- 0 41 23.2	19.50
95	<i>p</i> ⁵ Leonis	5	11 7 40.12	3.076	+ 0 34 39.7	19.54
96	B. A. C. 3901	6	11 21 49.12	+3.062	- 1 2 44.1	-19.82
97	<i>e</i> Leonis	5	11 24 14.08	3.065	2 20 49.5	19.82
98	B. A. C. 3955	5½	11 32 19.58	3.075	1 46 41.5	19.95
99	B. A. C. 4006	6	11 44 57.37	3.068	4 40 18.4	20.03
100	B. A. C. 4063	6½	11 57 30.57	3.077	4 48 58.0	20.11
101	14 Virginis	6½	12 13 12.75	+3.087	- 8 15 11.2	-20.00
102	B. A. C. 4201	6½	12 21 49.78	3.087	8 1 1.0	19.99
103	<i>γ</i> Virginis	6	12 27 38.24	3.090	8 47 44.3	19.93
104	B. A. C. 4259	6	12 33 14.75	3.105	7 22 40.2	19.99
105	Rumk. 4137	7	12 42 49.93	3.110	8 34 10.8	19.69
106	<i>ψ</i> Virginis	5	12 48 9.88	+3.113	- 8 53 32.9	-19.65
107	<i>g</i> Virginis	6	13 1 39.80	3.137	10 6 13.0	19.35
108	<i>z</i> Virginis	6	13 20 26.02	3.161	12 5 17.4	18.87
109	75 Virginis	6	13 26 30.28	3.199	14 45 1.4	18.65
110	B. A. C. 4531	6	13 28 21.00	+3.185	-12 36 12.7	-18.64

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MEAN PLACES FOR 1881.0.

No.	Name.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
111	85 Virginis	6	^h 13 ^m 39 ^s 10.69	+3.223	—15° 10' 10.9"	—18.20
112	B. A. C. 4679	6½	13 58 0.76	3.243	14 23 54.8	17.49
113	B. A. C. 4700	5½	14 4 20.48	3.261	15 44 20.9	17.24
114	B. A. C. 4722	6	14 8 50.99	3.307	17 38 41.4	16.98
115	B. A. C. 4739	6½	14 12 2.94	3.310	18 9 48.0	16.82
116	B. A. C. 4814	7	14 28 8.86	+3.363	—19 54 59.6	—16.01
117	B. A. C. 4896	6	14 44 55.57	3.341	17 17 40.3	15.25
118	B. A. C. 4923	6½	14 50 31.04	3.486	20 52 37.8	16.51
119	♌ Libræ	6½	15 6 32.55	3.409	19 11 52.4	13.66
120	O. Arg. S., 14428	6½	15 11 0.45	3.438	20 16 58.8	13.49
121	B. A. C. 5109	6½	15 25 46.45	+3.428	—19 15 48.6	—12.57
122	Yar. 6425	6½	15 30 33.90	3.493	21 43 47.9	12.16
123	Lal. 28466	6	15 32 21.44	3.517	22 45 34.6	12.09
124	♏ Libræ	5	15 35 5.47	3.445	19 17 30.6	11.97
125	B. A. C. 5220	6½	15 41 23.49	3.549	23 27 54.3	11.41
126	♏ Libræ	5½	15 46 25.72	+3.475	—19 48 36.1	—11.05
127	B. A. C. 5281	6	15 50 43.25	3.496	20 38 12.0	10.69
128	♏ Scorpii	2½	15 53 17.92	3.537	22 16 54.1	10.57
129	♏ Scorpii	4	15 59 50.84	3.506	20 20 43.0	10.03
130	B. A. C. 5354	6½	16 1 37.29	3.574	23 21 58.0	9.99
131	♏ Scorpii	4	16 5 4.79	+3.477	—19 9 0.6	9.68
132	B. A. C. 5395	6	16 6 40.78	3.518	21 5 40.5	9.49
133	B. A. C. 5418	6½	16 9 17.42	3.598	23 59 0.4	9.31
134	♏ Scorpii	5½	16 13 28.59	3.599	23 52 53.4	9.06
135	♏ Ophiuchi, pr.	5	16 18 26.98	3.590	23 10 16.3	8.56
136	♏ Scorpii	6	16 22 58.74	+3.636	—24 51 6.8	—8.27
137	♏ Ophiuchi	5	16 25 5.10	3.548	21 12 37.3	8.04
138	B. A. C. 5571	7	16 34 23.48	3.632	24 14 7.5	7.31
139	B. A. C. 5623	6½	16 40 59.79	3.640	24 18 44.4	6.76
140	♏ Ophiuchi	6	16 42 29.68	3.643	24 25 40.8	6.67
141	22 Ophiuchi	6½	16 47 39.37	+3.637	—23 18 54.7	—8.24
142	24 Ophiuchi	6½	16 49 37.39	3.614	22 57 36.0	6.12
143	26 Ophiuchi	6	16 52 52.15	3.663	24 48 22.7	5.92
144	B. A. C. 5767	6½	17 0 38.69	3.669	24 50 22.3	5.13
145	B. A. C. 5791	6	17 4 54.94	3.680	25 6 23.8	4.77
146	Yar. 7137	6½	17 7 48.09	+3.567	—20 49 46.2	—4.53
147	B. A. C. 5831	6	17 10 51.09	3.660	23 56 24.4	4.37
148	♏ Ophiuchi, var.	5	17 13 52.41	3.591	20 58 59.9	4.10
149	B. A. C. 5866	6	17 17 34.51	3.573	21 19 46.1	3.76
150	♏ Ophiuchi	5	17 19 6.21	3.658	24 3 51.3	3.69
151	♏ Ophiuchi	5	17 24 9.32	+3.656	—23 52 8.5	—3.17
152	52 Ophiuchi	7	17 28 9.14	3.604	21 57 44.0	2.04
153	B. A. C. 5954	6	17 31 35.96	3.604	21 50 24.6	2.39
154	B. A. C. 5992	6½	17 37 13.40	3.613	22 8 23.2	2.11
155	B. A. C. 6023	6½	17 42 40.91	3.669	24 9 59.4	1.50
156	63 Ophiuchi	6½	17 47 34.78	+3.694	—24 51 44.0	—1.24
157	5 Sagittarii, var.	6	17 52 53.73	3.683	24 16 23.2	0.65
158	7 Sagittarii	6	17 55 33.47	3.672	24 16 47.9	0.40
159	B. A. C. 6111	6½	17 57 52.59	3.687	24 24 11.3	0.23
160	B. A. C. 6125	7	18 0 3.14	3.587	21 27 17.5	—0.02
161	B. A. C. 6161	6	18 4 27.61	+3.658	—23 43 26.1	+0.34
162	14 Sagittarii	6½	18 7 7.13	3.608	21 44 35.2	0.60
163	17 Sagittarii	7	18 9 30.69	3.575	20 34 55.6	0.79
164	B. A. C. 6222	6½	18 14 50.08	3.637	22 58 20.6	1.31
165	21 Sagittarii	5	18 18 15.78	+3.573	—20 36 13.3	+1.58

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MEAN PLACES FOR 1881.0.

No.	Name.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
166	B. A. C. 6336	6½	18 30 46.94	+3.592	-21 20 42.6	+ 2.55
167	Yar. 7918	6½	18 35 54.44	3.537	19 23 46.6	3.12
168	B. A. C. 6376	6½	18 38 59.55	3.536	19 43 42.7	3.35
169	Yar. 7964	6	18 41 12.99	3.533	19 19 38.0	3.58
170	B. A. C. 6400	6½	18 43 0.39	3.628	22 58 54.8	3.75
171	31 Sagittarii	6	18 44 59.53	+3.607	-22 3 33.3	+ 3.90
172	γ ³ Sagittarii	5	18 47 55.54	3.630	22 49 4.0	4.19
173	ξ ³ Sagittarii	4	18 50 37.83	3.582	21 15 41.2	4.37
174	B. A. C. 6485	6½	18 54 27.08	3.610	22 51 39.9	4.74
175	Lal. 35499	6	18 56 7.63	+3.525	-19 16 24.0	+ 4.86
176	o Sagittarii	4	18 57 33.11	3.597	21 54 51.2	4.91
177	O. Arg. S., 19098 . . .	6	19 0 54.05	3.590	21 52 47.3	5.33
178	π Sagittarii	3	19 2 41.21	3.570	21 12 40.6	5.37
179	B. A. C. 6561	6	19 5 21.20	+3.579	-21 51 14.8	+ 5.62
180	d Sagittarii	5	19 10 40.31	3.513	19 9 47.8	6.07
181	ρ ³ Sagittarii	5½	19 14 54.45	3.506	18 31 39.1	6.34
182	B. A. C. 6558	6	19 21 9.82	3.492	18 35 53.5	6.98
183	Lal. 36857	6½	19 24 44.42	+3.517	-19 38 4.5	+ 7.25
184	e ¹ Sagittarii	5½	19 33 54.56	3.442	16 33 53.9	8.01
185	f Sagittarii	5	19 39 25.18	3.505	20 2 45.1	8.33
186	57 Sagittarii	5½	19 45 17.09	3.495	19 20 44.2	8.84
187	g Sagittarii	5½	19 51 11.96	+3.408	-15 48 20.6	+ 9.31
188	B. A. C. 6992	6½	20 14 5.35	3.376	15 9 32.2	11.07
189	B. A. C. 7063	6	20 24 24.29	3.360	15 27 8.3	11.83
190	B. A. C. 7097	6	20 28 48.03	3.393	16 56 4.3	12.01
191	τ ¹ Capricorni	6	20 30 40.83	+3.372	-15 33 30.3	+12.22
192	B. A. C. 7145	6½	20 33 51.08	3.375	16 32 50.7	12.48
193	B. A. C. 7221	6½	20 44 8.36	3.318	12 59 2.7	13.09
194	B. A. C. 7242	6½	20 46 34.92	3.282	12 1 20.8	13.32
195	8 Aquarii	6	20 53 22.42	+3.303	-13 30 40.5	+13.85
196	ν Aquarii	4½	21 3 6.58	3.272	11 51 9.4	14.39
197	17 Aquarii	6	21 16 33.34	3.219	9 49 34.0	15.12
198	19 Aquarii	6	21 18 49.34	3.227	10 15 12.5	15.13
199	Yar. 9373	6½	21 21 47.23	+3.253	-12 5 0.0	+15.46
200	ξ Aquarii	4½	21 31 25.01	3.199	8 23 13.7	15.95
201	B. A. C. 7562	6½	21 38 34.37	3.203	9 34 58.7	16.35
202	ε ³ Capricorni	6½	21 39 55.37	3.206	9 49 28.2	16.43
203	30 Aquarii	5½	21 57 0.73	+3.164	- 7 5 48.8	+17.26
204	B. A. C. 7744	6	22 6 32.15	3.128	5 18 24.5	17.50
205	44 Aquarii	6	22 10 53.74	3.134	5 58 50.4	17.88
206	51 Aquarii	6	22 17 54.94	3.128	5 26 19.6	18.07
207	κ Aquarii	5	22 31 35.64	+3.110	- 4 50 29.1	+18.46
208	1 Piscium	6	22 48 54.23	3.075	+ 0 25 51.8	19.08
209	3 Piscium	6	22 54 31.74	3.079	+ 0 27 9.4	19.26
210	A Piscium	5½	23 2 35.11	3.073	+ 1 28 48.7	19.58
211	B. A. C. 8152	6½	23 17 25.08	+3.065	- 0 21 48.7	+19.63
212	κ Piscium	4½	23 20 49.93	3.074	+ 0 36 14.9	19.65
213	Yar. 10387	7	23 25 0.90	3.065	1 42 32.7	19.82
214	16 Piscium	6	23 30 18.96	3.060	1 26 28.2	19.76
215	ι Piscium	4½	23 33 49.80	+3.084	+ 4 58 53.1	+19.48
216	λ Piscium	5	23 35 58.49	3.060	1 7 30.9	19.79
217	19 Piscium	6	23 40 18.81	3.067	2 49 36.2	20.00
218	ω Piscium	4	23 53 12.07	+3.078	+ 6 12 16.1	+19.93

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FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.			FEBRUARY.			MARCH.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
1.0	16' 43.2	61' 15.3	— 0.94	16' 12.2	59' 21.4	— 2.25	16' 9.1	59' 10.1	— 1.83
1.5	16' 39.5	61' 1.8	1.29	16' 4.6	58' 53.6	2.36	16' 2.9	58' 47.2	1.98
2.0	16' 34.7	60' 44.1	1.65	15' 56.8	58' 25.0	2.41	15' 56.2	58' 22.6	2.09
2.5	16' 28.9	60' 22.8	1.90	15' 48.9	57' 56.0	2.41	15' 49.2	57' 57.1	2.16
3.0	16' 22.3	59' 58.5	2.12	15' 41.1	57' 27.3	2.36	15' 42.1	57' 31.0	2.17
3.5	16' 15.0	59' 31.9	2.27	15' 33.5	56' 59.4	2.28	15' 35.1	57' 5.2	2.13
4.0	16' 7.4	59' 4.0	2.37	15' 26.3	56' 32.8	2.14	15' 28.2	56' 39.9	2.06
4.5	15' 59.6	58' 35.1	2.41	15' 19.5	56' 8.0	1.99	15' 21.6	56' 15.7	1.97
5.0	15' 51.7	58' 6.2	2.39	15' 13.3	55' 45.0	1.82	15' 15.4	55' 52.8	1.83
5.5	15' 44.0	57' 37.9	2.32	15' 7.6	55' 24.2	1.63	15' 9.7	55' 31.9	1.66
6.0	15' 36.6	57' 10.6	2.23	15' 2.6	55' 5.7	1.43	15' 4.5	55' 13.0	1.47
6.5	15' 29.5	56' 44.4	2.11	14' 58.2	54' 49.6	1.23	15' 0.1	54' 56.5	1.28
7.0	15' 22.8	56' 20.1	1.96	14' 54.4	54' 35.9	1.03	14' 56.2	54' 42.3	1.07
7.5	15' 16.7	55' 57.5	1.80	14' 51.4	54' 24.6	0.84	14' 53.0	54' 30.7	0.86
8.0	15' 11.0	55' 36.8	1.63	14' 48.9	54' 15.7	0.64	14' 50.6	54' 21.6	0.65
8.5	15' 6.0	55' 18.2	1.46	14' 47.2	54' 9.2	0.45	14' 48.8	54' 15.1	0.43
9.0	15' 1.5	55' 1.7	1.29	14' 46.0	54' 4.8	0.27	14' 47.7	54' 11.2	0.22
9.5	14' 57.5	54' 47.2	1.12	14' 45.4	54' 2.6	— 0.10	14' 47.3	54' 9.7	— 0.01
10.0	14' 54.1	54' 34.7	0.95	14' 45.3	54' 2.3	+ 0.06	14' 47.6	54' 10.7	+ 0.18
10.5	14' 51.3	54' 24.2	0.79	14' 45.7	54' 3.9	0.21	14' 48.5	54' 13.9	0.36
11.0	14' 48.9	54' 15.7	0.63	14' 46.6	54' 7.2	0.34	14' 49.9	54' 19.3	0.54
11.5	14' 47.1	54' 8.9	0.49	14' 48.0	54' 12.1	0.46	14' 51.9	54' 26.7	0.69
12.0	14' 45.7	54' 3.8	0.36	14' 49.6	54' 18.2	0.56	14' 54.4	54' 35.8	0.83
12.5	14' 44.8	54' 0.3	0.23	14' 51.6	54' 25.6	0.66	14' 57.3	54' 46.5	0.94
13.0	14' 44.2	53' 58.4	— 0.10	14' 54.0	54' 34.2	0.75	15' 0.6	54' 58.5	1.04
13.5	14' 44.1	53' 57.8	+ 0.01	14' 56.6	54' 43.7	0.83	15' 4.1	55' 11.5	1.12
14.0	14' 44.3	53' 58.6	0.12	14' 59.4	54' 54.1	0.90	15' 7.9	55' 25.5	1.19
14.5	14' 44.9	54' 0.7	0.21	15' 2.4	55' 5.3	0.97	15' 11.9	55' 40.1	1.24
15.0	14' 45.7	54' 3.9	0.31	15' 5.7	55' 17.3	1.03	15' 16.0	55' 55.2	1.27
15.5	14' 47.0	54' 8.4	0.42	15' 9.2	55' 30.1	1.10	15' 20.2	56' 10.5	1.28
16.0	14' 48.5	54' 14.1	0.52	15' 12.8	55' 43.5	1.15	15' 24.4	56' 25.9	1.28
16.5	14' 50.4	54' 21.0	0.62	15' 16.7	55' 57.6	1.21	15' 28.6	56' 41.2	1.27
17.0	14' 52.6	54' 29.1	0.73	15' 20.7	56' 12.4	1.26	15' 32.7	56' 56.3	1.24
17.5	14' 55.2	54' 38.6	0.84	15' 24.9	56' 27.8	1.32	15' 36.7	57' 11.1	1.21
18.0	14' 58.1	54' 49.4	0.96	15' 29.3	56' 43.8	1.37	15' 40.6	57' 25.4	1.17
18.5	15' 1.4	55' 1.6	1.07	15' 33.8	57' 0.5	1.42	15' 44.4	57' 39.3	1.13
19.0	15' 5.1	55' 15.2	1.20	15' 38.5	57' 17.8	1.47	15' 48.0	57' 52.7	1.09
19.5	15' 9.3	55' 30.4	1.32	15' 43.4	57' 35.6	1.51	15' 51.5	58' 5.5	1.04
20.0	15' 13.8	55' 47.0	1.45	15' 48.4	57' 53.9	1.54	15' 54.9	58' 17.8	0.99
20.5	15' 18.7	56' 5.1	1.57	15' 53.4	58' 12.4	1.55	15' 58.0	58' 29.4	0.94
21.0	15' 24.1	56' 24.8	1.70	15' 58.5	58' 31.1	1.55	16' 1.0	58' 40.5	0.89
21.5	15' 29.8	56' 45.9	1.81	16' 3.5	58' 49.7	1.52	16' 3.9	58' 50.9	0.83
22.0	15' 36.0	57' 8.4	1.91	16' 8.5	59' 7.8	1.47	16' 6.5	59' 0.5	0.77
22.5	15' 42.4	57' 32.0	2.01	16' 13.2	59' 25.1	1.40	16' 8.9	59' 9.3	0.69
23.0	15' 49.1	57' 56.6	2.09	16' 17.6	59' 41.2	1.28	16' 11.0	59' 17.1	0.61
23.5	15' 56.0	58' 21.9	2.12	16' 21.5	59' 55.7	1.12	16' 12.8	59' 23.8	0.50
24.0	16' 2.9	58' 47.3	2.12	16' 24.8	60' 7.9	0.92	16' 14.3	59' 29.1	0.38
24.5	16' 9.8	59' 12.5	2.06	16' 27.5	60' 17.6	0.69	16' 15.3	59' 32.9	0.24
25.0	16' 16.4	59' 36.8	1.98	16' 29.3	60' 24.4	0.42	16' 15.9	59' 34.9	+ 0.08
25.5	16' 22.6	59' 59.8	1.83	16' 30.3	60' 27.8	+ 0.13	16' 15.8	59' 34.8	— 0.10
26.0	16' 28.3	60' 20.7	1.63	16' 30.2	60' 27.5	— 0.19	16' 15.2	59' 32.6	0.28
26.5	16' 33.3	60' 38.8	1.37	16' 29.1	60' 23.4	0.50	16' 14.0	59' 28.1	0.48
27.0	16' 37.2	60' 53.4	1.05	16' 26.9	60' 15.6	0.81	16' 12.1	59' 21.1	0.68
27.5	16' 40.1	61' 4.0	0.71	16' 23.8	60' 4.0	1.10	16' 9.6	59' 11.8	0.88
28.0	16' 41.8	61' 10.3	+ 0.34	16' 19.7	59' 49.0	1.39	16' 6.4	59' 0.1	1.08
28.5	16' 42.3	61' 12.0	— 0.06	16' 14.8	59' 30.9	1.62	16' 2.5	58' 46.0	1.26
29.0	16' 41.4	61' 8.9	0.47	16' 9.1	59' 10.1	1.83	15' 58.2	58' 29.9	1.42
29.5	16' 39.0	61' 0.8	0.86	16' 2.9	58' 47.2	1.98	15' 53.3	58' 12.1	1.55
30.0	16' 35.8	60' 48.2	1.23	15' 56.2	58' 22.6	2.09	15' 48.1	57' 52.8	1.66
30.5	16' 31.2	60' 31.4	1.56	15' 49.2	57' 57.1	2.16	15' 42.5	57' 32.3	1.74
31.0	16' 25.7	60' 11.0	1.85	15' 42.1	57' 31.0	2.17	15' 36.7	57' 11.2	1.78
31.5	16' 19.3	59' 47.4	— 2.07	15' 35.1	57' 5.2	— 2.13	15' 30.9	56' 49.7	— 1.78

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Day of Month.	APRIL.			MAY.			JUNE.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d									
1.0	15 25.1	56 28.4	-1.76	15 0.5	54 58.3	-1.09	14 46.3	54 5.9	+0.04
1.5	15 19.4	56 7.6	1.70	14 57.2	54 45.9	0.96	14 46.7	54 7.5	0.23
2.0	15 14.0	55 47.7	1.61	14 54.3	54 35.3	0.80	14 47.8	54 11.4	0.42
2.5	15 8.9	55 29.1	1.49	14 51.9	54 26.6	0.64	14 49.5	54 17.6	0.62
3.0	15 4.3	55 12.1	1.33	14 50.1	54 19.9	0.47	14 51.8	54 26.3	0.83
3.5	15 0.2	54 57.0	1.17	14 48.8	54 15.3	0.28	14 54.9	54 37.5	1.03
4.0	14 56.6	54 43.9	0.99	14 48.3	54 13.2	-0.07	14 58.6	54 51.0	1.24
4.5	14 53.7	54 33.0	0.80	14 48.4	54 13.6	+0.14	15 2.9	55 7.1	1.44
5.0	14 51.4	54 24.6	0.59	14 49.2	54 16.6	0.36	15 7.9	55 25.5	1.63
5.5	14 49.8	54 18.7	0.38	14 50.7	54 22.0	0.56	15 13.6	55 46.1	1.80
6.0	14 48.9	54 15.4	-0.16	14 52.9	54 30.1	0.78	15 19.7	56 8.6	1.96
6.5	14 48.7	54 14.8	+0.06	14 55.8	54 40.8	0.99	15 26.3	56 33.0	2.09
7.0	14 49.2	54 16.7	0.27	14 59.3	54 53.8	1.19	15 33.4	56 58.8	2.20
7.5	14 50.4	54 21.2	0.48	15 3.5	55 9.2	1.37	15 40.7	57 25.7	2.27
8.0	14 52.3	54 28.2	0.69	15 8.3	55 26.7	1.55	15 48.2	57 53.2	2.29
8.5	14 54.9	54 37.6	0.87	15 13.6	55 46.2	1.70	15 55.6	58 20.6	2.27
9.0	14 58.0	54 49.1	1.05	15 19.4	56 7.4	1.82	16 2.9	58 47.5	2.20
9.5	15 1.7	55 2.6	1.20	15 25.5	56 29.8	1.91	16 9.9	59 13.2	2.07
10.0	15 5.9	55 17.9	1.34	15 31.8	56 53.2	1.98	16 16.5	59 37.1	1.88
10.5	15 10.5	55 34.7	1.45	15 38.4	57 17.2	2.00	16 22.3	59 58.4	1.65
11.0	15 15.3	55 52.6	1.53	15 44.9	57 41.2	1.98	16 27.3	60 16.8	1.39
11.5	15 20.4	56 11.4	1.59	15 51.3	58 4.7	1.92	16 31.3	60 31.6	1.07
12.0	15 25.7	56 30.8	1.62	15 57.4	58 27.2	1.83	16 34.3	60 42.5	0.72
12.5	15 31.1	56 50.4	1.62	16 3.2	58 48.3	1.68	16 36.1	60 49.2	0.37
13.0	15 36.3	57 9.7	1.58	16 8.4	59 7.4	1.49	16 36.7	60 51.6	+0.02
13.5	15 41.4	57 28.4	1.52	16 12.9	59 24.2	1.29	16 36.2	60 49.8	-0.32
14.0	15 46.3	57 46.4	1.45	16 16.8	59 38.4	1.06	16 34.7	60 44.0	0.65
14.5	15 50.9	58 3.1	1.34	16 19.9	59 49.6	0.81	16 32.1	60 34.4	0.94
15.0	15 55.1	58 18.5	1.23	16 22.1	59 57.8	0.54	16 28.5	60 21.5	1.20
15.5	15 58.9	58 32.5	1.09	16 23.4	60 2.7	0.28	16 24.2	60 5.6	1.42
16.0	16 2.2	58 44.7	0.94	16 23.9	60 4.5	+0.02	16 19.3	59 47.5	1.59
16.5	16 5.0	58 55.1	0.78	16 23.6	60 3.2	-0.21	16 13.9	59 27.6	1.71
17.0	16 7.3	59 3.6	0.63	16 22.5	59 59.3	0.43	16 8.1	59 6.4	1.79
17.5	16 9.2	59 10.4	0.48	16 20.8	59 52.9	0.64	16 2.2	58 44.6	1.84
18.0	16 10.5	59 15.3	0.33	16 18.4	59 44.2	0.81	15 56.1	58 22.4	1.85
18.5	16 11.4	59 18.5	0.20	16 15.5	59 33.7	0.95	15 50.1	58 0.2	1.83
19.0	16 11.8	59 20.1	+0.08	16 12.2	59 21.5	1.06	15 44.1	57 38.4	1.78
19.5	16 11.9	59 20.2	-0.04	16 8.6	59 8.1	1.15	15 38.4	57 17.3	1.72
20.0	16 11.5	59 19.0	0.15	16 4.7	58 53.9	1.22	15 32.9	56 57.0	1.65
20.5	16 10.9	59 16.6	0.25	16 0.6	58 39.0	1.27	15 27.6	56 37.5	1.58
21.0	16 9.9	59 13.0	0.35	15 56.5	58 23.7	1.29	15 22.5	56 19.0	1.49
21.5	16 8.6	59 8.2	0.44	15 52.2	58 8.1	1.31	15 17.8	56 1.7	1.40
22.0	16 7.0	59 2.3	0.53	15 47.9	57 52.3	1.32	15 13.4	55 45.5	1.31
22.5	16 5.1	58 55.4	0.62	15 43.6	57 36.6	1.31	15 9.3	55 30.4	1.21
23.0	16 2.9	58 47.4	0.71	15 39.4	57 20.9	1.31	15 5.5	55 16.4	1.12
23.5	16 0.4	58 38.3	0.80	15 35.1	57 5.2	1.29	15 2.0	55 3.5	1.03
24.0	15 57.7	58 28.1	0.89	15 30.9	56 49.8	1.28	14 58.8	54 51.8	0.94
24.5	15 54.6	58 16.9	0.97	15 26.7	56 34.5	1.26	14 55.9	54 41.1	0.84
25.0	15 51.3	58 4.6	1.06	15 22.7	56 19.5	1.24	14 53.3	54 31.6	0.75
25.5	15 47.6	57 51.3	1.15	15 18.6	56 4.7	1.21	14 51.0	54 23.1	0.66
26.0	15 43.8	57 37.0	1.23	15 14.7	55 50.4	1.17	14 49.0	54 15.8	0.56
26.5	15 39.6	57 21.8	1.29	15 10.9	55 36.5	1.14	14 47.3	54 9.7	0.46
27.0	15 35.3	57 6.0	1.34	15 7.3	55 23.0	1.10	14 46.0	54 4.8	0.35
27.5	15 30.8	56 49.6	1.38	15 3.8	55 10.1	1.03	14 45.0	54 1.2	0.23
28.0	15 26.3	56 32.9	1.41	15 0.5	54 58.0	0.97	14 44.5	53 59.2	-0.10
28.5	15 21.7	56 15.9	1.41	14 57.4	54 46.8	0.89	14 44.3	53 58.8	+0.03
29.0	15 17.1	55 59.1	1.38	14 54.6	54 36.6	0.81	14 44.6	53 59.9	0.16
29.5	15 12.6	55 42.7	1.34	14 52.2	54 27.5	0.71	14 45.4	54 2.7	0.31
30.0	15 8.3	55 26.9	1.27	14 50.0	54 19.7	0.58	14 46.7	54 7.4	0.48
30.5	15 4.3	55 12.0	1.20	14 48.3	54 13.5	0.44	14 48.5	54 14.1	0.65
31.0	15 0.5	54 58.3	1.09	14 47.1	54 9.1	0.29	14 50.9	54 23.0	0.84
31.5	14 57.2	54 45.9	-0.96	14 46.4	54 6.5	-0.13	14 54.0	54 34.1	+1.02

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Day of Month.	JULY.			AUGUST.			SEPTEMBER.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
1.0	14 50.9	54 23.0	+ 0.84	15 17.4	56 0.2	+ 1.73	15 54.3	58 15.7	+ 1.90
1.5	14 54.0	54 34.1	1.02	15 23.3	56 21.9	1.87	16 05	58 38.5	1.89
2.0	14 57.6	54 47.4	1.20	15 29.6	56 45.2	2.00	16 6 7	59 1.1	1.86
2.5	15 1.8	55 2.9	1.39	15 36.4	57 9.9	2.11	16 12.6	59 23.1	1.79
3.0	15 6.6	55 20.7	1.58	15 43.5	57 35.9	2.20	16 18.3	59 44.0	1.68
3.5	15 12.1	55 40.7	1.76	15 50.8	58 2.8	2.27	16 23.6	60 3.2	1.51
4.0	15 18.1	56 2.8	1.92	15 58.2	58 30.1	2.28	16 28.2	60 20.2	1.30
4.5	15 24.6	56 26.8	2.07	16 5.7	58 57.5	2.26	16 32.1	60 34.4	1.05
5.0	15 31.6	56 52.5	2.21	16 13.0	59 24.3	2.19	16 35.0	60 45.3	0.75
5.5	15 39.0	57 19.7	2.31	16 19.9	59 49.9	2.07	16 37.0	60 52.5	0.43
6.0	15 46.7	57 47.9	2.38	16 26.4	60 13.7	1.98	16 37.8	60 55.6	+ 0.08
6.5	15 54.6	58 16.7	2.41	16 32.2	60 34.9	1.64	16 37.5	60 54.4	- 0.28
7.0	16 2.4	58 45.6	2.39	16 37.1	60 52.8	1.34	16 36.0	60 48.8	0.64
7.5	16 10.1	59 13.9	2.32	16 40.9	61 7.0	1.00	16 33.3	60 38.9	1.00
8.0	16 17.5	59 41.0	2.18	16 43.6	61 16.8	0.62	16 29.5	60 24.9	1.33
8.5	16 24.3	60 6.1	1.98	16 45.0	61 21.8	+ 0.21	16 24.6	60 7.2	1.61
9.0	16 30.4	60 28.5	1.74	16 45.0	61 21.9	- 0.20	16 18.9	59 46.2	1.86
9.5	16 35.6	60 47.6	1.43	16 43.6	61 16.9	0.61	16 12.5	59 22.6	2.06
10.0	16 39.8	61 2.7	1.08	16 41.0	61 7.2	1.01	16 5.5	58 57.0	2.20
10.5	16 42.7	61 13.4	0.70	16 37.1	60 52.9	1.37	15 58.2	58 30.0	2.28
11.0	16 44.3	61 19.4	+ 0.29	16 32.1	60 34.5	1.69	15 50.6	58 2.3	2.32
11.5	16 44.6	61 20.4	- 0.12	16 26.1	60 12.6	1.95	15 43.0	57 34.4	2.31
12.0	16 43.5	61 16.5	0.53	16 19.4	59 48.0	2.15	15 35.6	57 7.0	2.24
12.5	16 41.1	61 7.8	0.90	16 12.1	59 21.2	2.30	15 28.4	56 40.5	2.15
13.0	16 37.6	60 54.8	1.26	16 4.4	58 53.0	2.38	15 21.6	56 15.5	2.02
13.5	16 33.0	60 37.8	1.55	15 56.6	58 24.1	2.42	15 15.2	55 52.1	1.86
14.0	16 27.5	60 17.5	1.81	15 48.7	57 55.1	2.39	15 9.4	55 30.8	1.68
14.5	16 21.2	59 54.5	2.01	15 40.9	57 26.7	2.32	15 4.2	55 11.7	1.49
15.0	16 14.4	59 20.5	2.14	15 33.5	56 59.3	2.23	14 59.6	54 54.9	1.20
15.5	16 7.2	59 3.2	2.22	15 26.4	56 33.2	2.10	14 55.7	54 40.6	1.08
16.0	15 59.9	58 36.3	2.26	15 19.8	56 8.9	1.95	14 52.5	54 28.7	0.88
16.5	15 52.5	58 9.2	2.24	15 13.6	55 46.4	1.78	14 50.0	54 19.4	0.67
17.0	15 45.3	57 42.6	2.18	15 8.1	55 26.0	1.61	14 48.0	54 12.4	0.48
17.5	15 38.3	57 16.9	2.11	15 3.1	55 7.7	1.43	14 46.8	54 7.8	0.28
18.0	15 31.6	56 52.2	2.01	14 58.7	54 51.7	1.24	14 46.2	54 5.5	- 0.10
18.5	15 25.2	56 28.8	1.88	14 55.0	54 37.8	1.06	14 46.1	54 5.3	+ 0.08
19.0	15 19.2	56 7.0	1.74	14 51.8	54 26.2	0.88	14 46.7	54 7.3	0.25
19.5	15 13.8	55 46.9	1.60	14 49.2	54 16.7	0.70	14 47.7	54 11.2	0.39
20.0	15 8.7	55 28.4	1.46	14 47.2	54 9.3	0.53	14 49.2	54 16.7	0.53
20.5	15 4.2	55 11.8	1.31	14 45.7	54 3.8	0.37	14 51.1	54 23.8	0.65
21.0	15 0.2	54 56.9	1.17	14 44.8	54 0.3	0.22	14 53.5	54 32.3	0.76
21.5	14 56.6	54 43.8	1.02	14 44.3	53 58.6	- 0.08	14 56.1	54 42.0	0.85
22.0	14 53.5	54 32.4	0.88	14 44.3	53 58.5	+ 0.06	14 59.0	54 52.7	0.93
22.5	14 50.8	54 22.7	0.74	14 44.6	53 59.9	0.18	15 2.2	55 4.4	1.01
23.0	14 48.6	54 14.6	0.61	14 45.4	54 2.8	0.29	15 5.6	55 16.8	1.07
23.5	14 46.8	54 8.0	0.48	14 46.6	54 7.0	0.41	15 9.1	55 29.9	1.12
24.0	14 45.5	54 2.9	0.36	14 48.1	54 12.5	0.51	15 12.8	55 43.5	1.16
24.5	14 44.5	53 59.2	0.25	14 49.9	54 19.2	0.60	15 16.7	55 57.6	1.19
25.0	14 43.8	53 56.8	0.14	14 52.0	54 27.0	0.70	15 20.6	56 12.0	1.22
25.5	14 43.5	53 55.8	- 0.03	14 54.5	54 36.0	0.80	15 24.6	56 26.8	1.25
26.0	14 43.6	53 56.2	+ 0.08	14 57.2	54 46.1	0.88	15 28.8	56 41.9	1.27
26.5	14 44.1	53 57.9	0.19	15 0.3	54 57.4	0.98	15 32.9	56 57.3	1.20
27.0	14 44.9	54 0.9	0.31	15 3.7	55 9.8	1.08	15 37.2	57 12.9	1.31
27.5	14 46.1	54 5.4	0.43	15 7.4	55 23.4	1.18	15 41.5	57 28.7	1.32
28.0	14 47.8	54 11.4	0.56	15 11.4	55 39.2	1.28	15 45.8	57 44.5	1.33
28.5	14 49.8	54 18.9	0.69	15 15.8	55 54.2	1.37	15 50.2	58 0.5	1.33
29.0	14 52.3	54 28.0	0.83	15 20.4	56 11.3	1.47	15 54.5	58 16.4	1.32
29.5	14 55.3	54 38.9	0.98	15 25.4	56 29.6	1.57	15 58.8	58 32.3	1.31
30.0	14 58.7	54 51.5	1.12	15 30.7	56 49.0	1.66	16 3.0	58 47.8	1.27
30.5	15 2.6	55 5.9	1.28	15 36.3	57 9.5	1.75	16 7.1	59 2.7	1.21
31.0	15 7.1	55 22.2	1.44	15 42.1	57 30.9	1.82	16 11.0	59 16.9	1.14
31.5	15 12.0	55 40.4	+ 1.58	15 48.1	57 53.0	+ 1.87	16 14.5	59 30.0	+ 1.03

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Day of Month.	OCTOBER.			NOVEMBER.			DECEMBER.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d									
1.0	16 11.0	59 16.9	+ 1.14	16 10.9	59 16.7	- 0.25	15 49.3	57 57.3	- 1.06
1.5	16 14.5	59 30.0	1.03	16 9.8	59 12.8	0.40	15 45.8	57 44.4	1.10
2.0	16 17.7	59 41.6	0.90	16 8.3	59 7.1	0.55	15 42.1	57 30.9	1.14
2.5	16 20.4	59 51.5	0.74	16 6.3	58 59.7	0.70	15 38.3	57 17.0	1.18
3.0	16 22.5	59 59.4	0.55	16 3.7	58 50.3	0.86	15 34.4	57 2.6	1.22
3.5	16 24.0	60 4.8	0.34	16 0.6	58 39.0	1.01	15 30.3	56 47.7	1.25
4.0	16 24.7	60 7.4	+ 0.09	15 57.1	58 26.0	1.16	15 26.2	56 32.6	1.27
4.5	16 24.6	60 6.9	- 0.16	15 53.1	58 11.2	1.29	15 22.1	56 17.3	1.27
5.0	16 23.6	60 3.3	0.44	15 48.7	57 55.0	1.41	15 17.9	56 2.0	1.27
5.5	16 21.7	59 56.4	0.71	15 43.9	57 37.4	1.51	15 13.7	55 46.8	1.25
6.0	16 19.0	59 46.3	0.97	15 38.8	57 18.8	1.58	15 9.7	55 31.9	1.22
6.5	16 15.4	59 33.1	1.21	15 33.5	56 59.5	1.63	15 5.8	55 17.5	1.17
7.0	16 11.0	59 17.0	1.45	15 28.2	56 39.8	1.65	15 2.1	55 3.9	1.10
7.5	16 5.9	58 58.3	1.65	15 22.8	56 20.1	1.62	14 58.6	54 51.3	1.00
8.0	16 0.3	58 37.6	1.81	15 17.6	56 0.8	1.58	14 55.5	54 39.9	0.89
8.5	15 54.1	58 15.1	1.92	15 12.5	55 42.2	1.51	14 52.8	54 29.9	0.77
9.0	15 47.7	57 51.4	2.00	15 7.7	55 24.6	1.41	14 50.6	54 21.6	0.61
9.5	15 41.1	57 27.2	2.03	15 3.3	55 8.4	1.28	14 48.8	54 15.2	0.45
10.0	15 34.4	57 2.8	2.02	14 59.3	54 53.9	1.13	14 47.6	54 10.8	0.27
10.5	15 27.9	56 38.8	1.97	14 55.0	54 41.3	0.96	14 47.0	54 8.6	- 0.08
11.0	15 21.6	56 15.5	1.89	14 53.1	54 30.8	0.77	14 47.1	54 8.8	+ 0.12
11.5	15 15.5	55 53.4	1.78	14 50.8	54 22.7	0.58	14 47.8	54 11.5	0.33
12.0	15 10.0	55 33.0	1.63	14 49.3	54 17.1	0.37	14 49.2	54 16.8	0.55
12.5	15 4.9	55 14.4	1.45	14 48.5	54 13.9	- 0.15	14 51.4	54 24.7	0.76
13.0	15 0.5	54 58.1	1.26	14 48.3	54 13.4	+ 0.07	14 54.2	54 35.1	0.97
13.5	14 56.7	54 44.1	1.07	14 48.9	54 15.5	0.28	14 57.8	54 48.1	1.19
14.0	14 53.5	54 32.5	0.86	14 50.2	54 20.3	0.50	15 2.0	55 3.7	1.41
14.5	14 51.0	54 23.4	0.64	14 52.2	54 27.7	0.72	15 6.9	55 21.7	1.59
15.0	14 49.3	54 17.0	0.43	14 54.9	54 37.6	0.93	15 12.4	55 41.8	1.76
15.5	14 48.3	54 13.2	- 0.21	14 58.3	54 50.0	1.12	15 18.4	56 3.9	1.91
16.0	14 47.9	54 11.9	0.00	15 2.2	55 4.5	1.30	15 24.9	56 27.7	2.04
16.5	14 48.2	54 13.1	+ 0.21	15 6.7	55 21.0	1.45	15 31.7	56 52.8	2.13
17.0	14 49.2	54 16.8	0.41	15 11.7	55 39.2	1.58	15 38.8	57 18.8	2.19
17.5	14 50.9	54 22.8	0.59	15 17.0	55 58.8	1.67	15 46.0	57 45.2	2.20
18.0	14 53.1	54 30.9	0.76	15 22.7	56 19.5	1.75	15 53.1	58 11.4	2.15
18.5	14 55.8	54 40.9	0.91	15 28.5	56 40.8	1.79	16 0.0	58 36.8	2.07
19.0	14 59.0	54 52.8	1.05	15 34.3	57 2.4	1.80	16 6.6	59 0.9	1.93
19.5	15 2.7	55 6.1	1.16	15 40.2	57 23.9	1.77	16 12.6	59 23.0	1.74
20.0	15 6.6	55 20.7	1.25	15 45.9	57 44.8	1.70	16 17.9	59 42.6	1.51
20.5	15 10.8	55 36.1	1.32	15 51.3	58 4.7	1.61	16 22.5	59 59.2	1.25
21.0	15 15.2	55 52.3	1.37	15 56.4	58 23.3	1.48	16 26.1	60 12.5	0.95
21.5	15 19.8	56 9.0	1.40	16 0.9	58 40.1	1.32	16 28.7	60 22.2	0.64
22.0	15 24.4	56 25.8	1.40	16 5.0	58 54.9	1.14	16 30.3	60 28.0	+ 0.31
22.5	15 28.9	56 42.6	1.38	16 8.4	59 7.5	0.95	16 30.8	60 29.9	0.00
23.0	15 33.4	56 59.0	1.34	16 11.2	59 17.8	0.74	16 30.3	60 28.0	- 0.31
23.5	15 37.7	57 14.9	1.30	16 13.3	59 25.5	0.53	16 29.8	60 22.6	0.58
24.0	15 41.9	57 30.1	1.23	16 14.7	59 30.8	0.33	16 26.5	60 14.1	0.83
24.5	15 45.8	57 44.5	1.16	16 15.5	59 33.7	+ 0.15	16 23.4	60 2.7	1.05
25.0	15 49.5	57 58.0	1.08	16 15.7	59 34.4	- 0.03	16 19.7	59 49.0	1.23
25.5	15 52.9	58 10.5	1.00	16 15.3	59 33.0	0.19	16 15.4	59 33.3	1.36
26.0	15 56.0	58 22.0	0.92	16 14.5	59 29.8	0.33	16 10.8	59 16.2	1.46
26.5	15 58.8	58 32.4	0.83	16 13.2	59 25.0	0.46	16 5.9	58 58.2	1.53
27.0	16 1.4	58 41.8	0.74	16 11.5	59 18.8	0.56	16 0.8	58 39.6	1.56
27.5	16 3.7	58 50.1	0.65	16 9.5	59 11.4	0.66	15 55.7	58 20.8	1.57
28.0	16 5.6	58 57.4	0.57	16 7.1	59 2.8	0.74	15 50.6	58 2.0	1.56
28.5	16 7.4	59 3.8	0.49	16 4.6	58 53.5	0.81	15 45.5	57 43.4	1.53
29.0	16 8.9	59 9.2	0.41	16 1.9	58 43.6	0.86	15 40.5	57 25.2	1.49
29.5	16 10.0	59 13.5	0.32	15 59.0	58 33.0	0.92	15 35.7	57 7.6	1.44
30.0	16 10.9	59 16.7	0.22	15 55.9	58 21.7	0.97	15 31.1	56 50.6	1.39
30.5	16 11.4	59 18.7	0.12	15 52.7	58 9.7	1.02	15 26.7	56 34.2	1.33
31.0	16 11.7	59 19.5	+ 0.01	15 49.3	57 57.3	1.06	15 22.4	56 18.5	1.27
31.5	16 11.5	59 18.9	- 0.11	15 45.8	57 44.4	- 1.10	15 18.3	56 3.4	- 1.22

WASHINGTON MEAN TIME.

PHASES.

Month.	First Quarter.	Full Moon.	Last Quarter.	New Moon.	First Quarter.
January	^d 15 ^h 0.9 ^m	^d 18 ^h 25.6 ^m	^d 15 ^h 39.8 ^m	^d 7 ^h 40.0 ^m	
February	5 7 45.8	13 13 15.5	21 2 22.3	27 18 24.4	
March	7 2 53.8	15 5 28.7	22 10 21.8	29 5 24.2	
April	5 22 46.0	13 18 41.8	20 16 30.2	27 17 16.4	
May	5 17 35.7	13 5 15.6	19 21 59.2	27 6 27.5	
June	4 10 11.0	11 13 48.5	18 4 10.6	25 20 55.3	
July	4 0 7.9	10 21 5.3	17 12 25.6	25 12 10.8	
August	2 11 34.3	9 3 58.7	15 23 49.5	24 3 37.0	^d 31 ^h 20 ^m 54.1
September		7 11 31.3	14 14 53.4	22 18 46.4	30 4 40.3
October		6 20 50.9	14 9 17.8	22 9 22.9	29 11 39.2
November		5 8 54.9	13 5 52.9	20 23 12.9	27 18 53.4
December		5 0 5.6	13 2 56.6	20 11 58.9	27 3 33.5

APOGEE, PERIGEE, AND GREATEST LIBRATION.

Month.	Apogee.	Perigee.	Apogee.	Greatest Libration.		
January	^d 13 ^h 10.9	^d 28 ^h 11.2		^d 5 ^h 22 ^m 34 N.W.	^d 22 ^h 2 ^m 18 N.E.	
February	9 19.5	25 16.9		3 6 36 N.W.	18 17 5 N.E.	
March	9 12.6	25 5.3		3 11 10 N.W.	17 1 35 N.E.	^d 31 ^h 6 ^m 5 S.W.
April	6 8.7	19 8.0			12 16 48 N.E.	27 6 59 S.W.
May	4 4.0	16 1.0	^d 31 ^h 21.2		10 5 22 N.E.	23 13 30 N.W.
June		13 0.7	28 9.3		7 4 46 N.E.	19 16 7 N.W.
July		11 8.5	25 14.8		5 8 51 S.E.	17 13 55 N.W.
August		8 18.2	21 18.9	2 13 28 S.E.	14 18 6 N.W.	20 12 46 S.E.
September		6 2.7	18 6.7		11 22 52 S.W.	26 17 16 S.E.
October		4 4.3	16 0.0		9 23 19 S.W.	22 21 58 S.E.
October		31 1.0				
November	12 20.2	24 22.0			6 13 7 S.W.	18 22 40 S.E.
December	10 16.8	22 12.0		3 3 48 S.W.	16 18 31 S.E.	29 11 42 S.W.

MOON'S EQUATOR.

The moon's libration in latitude and longitude, at any time, may be found by means of the following formulæ and tables:

I = the inclination to the ecliptic of the moon's equator = $1^{\circ} 28'.8$,

Ω = mean longitude of the moon's ascending node, (see page 248),

= mean longitude of the descending node of the moon's equator,

C = the angle at the centre of the moon's disc made by a meridian of the moon with the circle of declination, reckoned from north to east on the apparent disc.

i , Δ , Ω' , and ζ are defined on the next page, where their values for the year are given.

λ , β , α' , and δ' the apparent longitude, latitude, right ascension, and declination of the moon affected with parallax.

λ' = the selenocentric longitude of the earth, reckoned on the moon's equator from its descending node, Ω .

$$\left. \begin{aligned} \Delta \lambda &= -0'.57 \sin 2(\Omega - \lambda) \\ \alpha &= \sin I \cos(\Omega - \lambda) \\ \tan B &= \tan I \sin(\Omega - \lambda) \\ \lambda' &= \lambda + \Delta \lambda + \alpha b \end{aligned} \right\} \text{See table, page 345.}$$

The libration in latitude = $b = B - \beta$,

" " longitude = $l = \lambda' - \zeta$.

$$\sin C = \sin i \frac{\cos(\lambda' + \Delta - \Omega)}{\cos \delta'} = -\sin i \frac{\cos(\lambda' - \Omega')}{\cos b}.$$

WASHINGTON MEAN TIME.

Mean Noon.	MOON'S EQUATOR.			Moon's Mean Longitude.	Mean Solar Days.	Motion of ☾
	i Inclination to the Earth's Equator.	Δ Ascend'g Node on Earth's Equator to Ascending Node on Ecliptic.	Ω' Ascend'g Node on Earth's Equator.			
Jan. 0	23° 35.1	83° 14.1	3° 41.7	282° 14.5	0.1	1° 19.06
10	23 35.9	82 42.6	3 41.4	54 0.3	0.2	2 38.12
20	23 36.7	82 11.1	3 41.1	185 46.2	0.3	3 57.18
30	23 37.6	81 39.6	3 40.8	317 32.0	0.4	5 16.23
Feb. 9	23 38.4	81 8.1	3 40.5	89 17.8	0.5	6 35.29
					0.6	7 54.35
19	23 39.2	80 36.6	3 40.2	221 3.7	0.7	9 13.41
March 1	23 40.0	80 5.2	3 39.8	352 49.5	0.8	10 32.47
11	23 40.8	79 33.7	3 39.5	124 35.4	0.9	11 51.53
21	23 41.6	79 2.3	3 39.1	256 21.2	1.0	13 10.58
31	23 42.4	78 30.9	3 38.7	28 7.0		
					2.0	26 21.17
April 10	23 43.2	77 59.5	3 38.3	159 52.9	3.0	39 31.75
20	23 44.0	77 28.1	3 37.9	291 38.7	4.0	52 42.33
30	23 44.8	76 56.7	3 37.4	63 24.5	5.0	65 52.92
May 10	23 45.6	76 25.4	3 37.0	195 10.4	6.0	79 3.50
20	23 46.4	75 54.1	3 36.5	326 56.2	7.0	92 14.09
					8.0	105 24.67
30	23 47.2	75 22.8	3 36.0	98 42.1	9.0	118 35.25
June 9	23 47.9	74 51.5	3 35.5	230 27.9	10.0	131 45.84
19	23 48.7	74 20.2	3 34.9	2 13.7		
29	23 49.5	73 49.0	3 34.4	133 59.6	Hours.	0° 32.94
July 9	23 50.3	73 17.8	3 33.8	265 45.4	1	1 5.88
					2	1 38.82
19	23 51.1	72 46.6	3 33.2	37 31.2	3	2 11.76
29	23 51.9	72 15.4	3 32.6	169 17.1	4	2 44.70
Aug. 8	23 52.7	71 44.2	3 32.0	301 2.9	5	3 17.65
18	23 53.4	71 13.0	3 31.3	72 48.8	6	3 50.59
28	23 54.2	70 41.9	3 30.7	204 34.6	7	4 23.53
					8	4 56.47
Sept. 7	23 55.0	70 10.8	3 30.0	336 20.4	9	5 29.41
17	23 55.7	69 39.7	3 29.3	108 6.3	10	6 2.35
27	23 56.5	69 8.6	3 28.6	239 52.1	11	6 35.29
Oct. 7	23 57.3	68 37.5	3 27.8	11 38.0	12	7 8.23
17	23 58.1	68 6.4	3 27.1	143 23.8	13	7 41.17
					14	8 14.11
27	23 58.8	67 35.3	3 26.3	275 9.6	15	8 47.06
Nov. 6	23 59.6	67 4.3	3 25.6	46 55.5	16	9 20.00
16	24 0.3	66 33.2	3 24.8	178 41.3	17	9 52.94
26	24 1.1	66 2.2	3 24.0	310 27.1	18	10 25.88
					19	10 58.82
Dec. 6	24 1.8	65 31.2	3 23.2	82 13.0	20	11 31.76
16	24 2.6	65 0.2	3 22.4	213 58.8	21	12 4.70
26	24 3.3	64 29.2	3 21.5	345 44.7	22	12 37.64
36	24 4.0	63 58.2	3 20.6	117 30.5	23	

TABLE FOR THE LIBRATION OF THE MOON.

Argument, $(\Omega - \lambda)$ or $(\Omega - \lambda - 180^\circ)$

$\Omega - \lambda$	$\Delta \lambda$	$\frac{1}{a}$	B	$\Omega - \lambda$	$\Omega - \lambda$	$\Delta \lambda$	$\frac{1}{a}$	B	$\Omega - \lambda$
0	0.0	39	0 0.0	180	46	0.6	56	1 3.9	134
1	0.0	39	0 1.6	179	47	0.6	57	1 4.9	133
2	0.0	39	0 3.1	178	48	0.6	58	1 6.0	132
3	0.1	39	0 4.7	177	49	0.6	59	1 7.0	131
4	0.1	39	0 6.2	176	50	0.6	60	1 8.0	130
5	0.1	39	0 7.7	175	51	0.6	62	1 9.0	129
6	0.2	39	0 9.3	174	52	0.6	63	1 10.0	128
7	0.2	39	0 10.8	173	53	0.5	64	1 10.9	127
8	0.2	39	0 12.4	172	54	0.5	66	1 11.8	126
9	0.2	39	0 13.9	171	55	0.5	67	1 12.7	125
10	0.2	39	0 15.4	170	56	0.5	69	1 13.6	124
11	0.3	39	0 16.9	169	57	0.5	71	1 14.5	123
12	0.3	40	0 18.5	168	58	0.5	73	1 15.3	122
13	0.3	40	0 20.0	167	59	0.5	75	1 16.1	121
14	0.3	40	0 21.5	166	60	0.5	77	1 16.9	120
15	0.3	40	0 23.0	165	61	0.5	80	1 17.6	119
16	0.3	40	0 24.5	164	62	0.5	83	1 18.4	118
17	0.3	40	0 26.0	163	63	0.5	86	1 19.1	117
18	0.3	41	0 27.4	162	64	0.5	89	1 19.8	116
19	0.4	41	0 28.9	161	65	0.4	92	1 20.4	115
20	0.4	41	0 30.4	160	66	0.4	95	1 21.1	114
21	0.4	41	0 31.8	159	67	0.4	99	1 21.7	113
22	0.4	42	0 33.2	158	68	0.4	103	1 22.3	112
23	0.4	42	0 34.7	157	69	0.4	108	1 22.9	111
24	0.4	42	0 36.1	156	70	0.4	113	1 23.4	110
25	0.4	43	0 37.5	155	71	0.4	119	1 23.9	109
26	0.5	43	0 38.9	154	72	0.4	125	1 24.4	108
27	0.5	43	0 40.3	153	73	0.4	132	1 24.9	107
28	0.5	44	0 41.7	152	74	0.3	141	1 25.3	106
29	0.5	44	0 43.1	151	75	0.3	150	1 25.7	105
30	0.5	45	0 44.4	150	76	0.3	160	1 26.1	104
31	0.5	45	0 45.7	149	77	0.3	172	1 26.5	103
32	0.5	46	0 47.0	148	78	0.2	186	1 26.8	102
33	0.5	46	0 48.4	147	79	0.2	202	1 27.1	101
34	0.5	47	0 49.7	146	80	0.2	222	1 27.4	100
35	0.5	47	0 51.0	145	81	0.2	247	1 27.7	99
36	0.5	48	0 52.2	144	82	0.2	278	1 27.9	98
37	0.5	48	0 53.4	143	83	0.1	318	1 28.1	97
38	0.6	49	0 54.7	142	84	0.1	370	1 28.3	96
39	0.6	50	0 55.9	141	85	0.1	440	1 28.5	95
40	0.6	50	0 57.1	140	86	0.1	555	1 28.6	94
41	0.6	51	0 58.3	139	87	0.1	740	1 28.7	93
42	0.6	52	0 59.4	138	88	0.0	1110	1 28.7	92
43	0.6	53	1 0.6	137	89	0.0	2220	1 28.8	91
44	0.6	54	1 1.7	136	90	0.0	∞	1 28.8	90
45	0.6	55	1 2.8	135					

 $\Delta \lambda$ has the sign of $\tan (\lambda - \Omega)$ a has the sign of $\cos (\Omega - \lambda)$ B has the sign of $\sin (\Omega - \lambda)$

Date. 1881.	FOR WASHINGTON MEAN NOON.					FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.	
Jan. 1	h m s 17 48 0.44	+16.362	23 47 15	-22.12	d h m 1 23 4.6	h m s 17 54 19.31	+16.504	23 54 59.2	-19.32	
2	17 54 34.53	16.478	23 55 17.0	19.17	2 23 7.3	18 0 56.78	16.614	24 2 6.9	16.30	
3	18 1 11.33	16.587	24 2 21.2	16.16	3 23 10.0	18 7 36.76	16.719	24 8 1.4	13.21	
4	18 7 50.67	16.691	24 8 12.3	13.08	4 23 12.8	18 14 19.21	16.817	24 12 40.8	10.06	
5	18 14 32.43	16.788	24 12 48.6	9.94	5 23 15.5	18 21 3.90	16.908	24 16 4.0	6.86	
6	18 21 16.42	16.878	24 16 9.0	6.75	6 23 18.3	18 27 50.76	16.995	24 18 9.6	3.60	
7	18 28 2.54	16.964	24 18 12.0	3.50	7 23 21.2	18 34 39.61	17.077	24 18 56.3	- 0.29	
8	18 34 50.63	17.045	24 18 56.5	- 0.20	8 23 24.1	18 41 30.35	17.152	24 18 22.9	+ 3.08	
9	18 41 40.59	17.119	24 18 21.0	+ 3.16	9 23 27.0	18 48 22.85	17.223	24 16 28.2	6.50	
10	18 48 32.29	17.189	24 16 24.6	6.56	10 23 30.0	18 55 17.00	17.289	24 13 11.0	9.95	
11	18 55 25.63	17.255	24 13 6.0	10.00	11 23 33.0	19 2 12.67	17.350	24 8 30.6	13.45	
12	19 2 20.47	17.315	24 8 24.4	13.49	12 23 36.0	19 9 9.76	17.406	24 2 25.2	16.99	
13	19 9 16.71	17.371	24 2 18.4	17.02	13 23 39.0	19 16 8.16	17.459	23 54 54.6	20.57	
14	19 16 14.25	17.423	23 54 47.4	20.58	14 23 42.0	19 23 7.74	17.506	23 45 57.5	24.18	
15	19 23 12.97	17.470	23 45 50.3	24.18	15 23 45.1	19 30 8.43	17.550	23 35 33.3	27.84	
16	19 30 12.78	17.513	23 35 26.4	27.82	16 23 48.2	19 37 10.11	17.589	23 23 41.1	31.52	
17	19 37 13.57	17.552	23 23 34.9	31.49	17 23 51.3	19 44 12.68	17.624	23 10 19.9	35.24	
18	19 44 15.23	17.586	23 10 14.8	35.19	18 23 54.4	19 51 16.03	17.654	22 55 29.0	38.90	
19	19 51 17.68	17.616	22 55 25.4	38.92	19 23 57.5	19 58 20.06	17.691	22 39 8.0	42.76	
20	19 58 20.80	17.642	22 39 6.2	42.68						
21	20 5 24.48	17.664	22 21 16.5	46.47	21 0 0.6	20 5 24.66	17.704	22 21 16.1	46.57	
22	20 12 28.64	17.682	22 1 55.6	50.28	22 0 3.8	20 12 29.75	17.722	22 1 52.5	50.40	
23	20 19 33.18	17.695	21 41 3.2	54.10	23 0 6.9	20 19 35.21	17.735	21 40 57.0	54.24	
24	20 26 37.97	17.703	21 18 38.9	57.93	24 0 10.0	20 26 40.93	17.743	21 18 29.2	58.08	
25	20 33 42.90	17.707	20 54 42.4	61.78	25 0 13.2	20 33 46.79	17.747	20 54 28.8	61.95	
26	20 40 47.87	17.706	20 29 13.3	65.64	26 0 16.3	20 40 52.69	17.745	20 28 55.4	65.83	
27	20 47 52.76	17.700	20 2 11.7	69.50	27 0 19.5	20 47 58.50	17.738	20 1 49.2	69.71	
28	20 54 57.40	17.687	19 33 37.6	73.35	28 0 22.6	20 55 4.06	17.726	19 33 10.0	73.57	
29	21 2 1.66	17.668	19 3 31.1	77.19	29 0 25.7	21 2 9.24	17.704	19 2 58.0	77.43	
30	21 9 5.38	17.641	18 31 52.7	81.01	30 0 28.9	21 9 13.87	17.678	18 31 13.7	81.26	
31	21 16 8.37	17.607	17 58 43.2	84.79	31 0 32.0	21 16 17.76	17.644	17 57 58.0	85.06	
Feb. 1	21 23 10.43	17.563	17 24 3.2	88.52	1 0 35.1	21 23 20.70	17.600	17 23 11.5	88.80	
2	21 30 11.32	17.509	16 47 54.1	92.19	2 0 38.2	21 30 22.45	17.545	16 46 55.5	92.48	
3	21 37 10.78	17.442	16 10 17.6	95.80	3 0 41.2	21 37 22.75	17.477	16 9 11.6	96.10	
4	21 44 8.45	17.361	15 31 15.5	99.32	4 0 44.2	21 44 21.24	17.395	15 30 2.3	99.63	
5	21 51 4.00	17.265	14 50 50.6	102.72	5 0 47.2	21 51 17.59	17.297	14 49 29.7	103.04	
6	21 57 57.01	17.149	14 9 6.0	105.97	6 0 50.2	21 58 11.35	17.179	14 7 37.4	106.29	
7	22 4 46.97	17.011	13 26 5.6	109.04	7 0 53.1	22 5 2.01	17.039	13 24 29.2	109.37	
8	22 11 33.30	16.845	12 41 54.1	111.88	8 0 55.9	22 11 48.99	16.871	12 40 9.9	112.20	
9	22 18 15.30	16.650	11 56 37.6	114.46	9 0 58.7	22 18 31.58	16.673	11 54 45.7	114.77	
10	22 24 52.21	16.420	11 10 22.6	116.73	10 1 1.4	22 25 9.00	16.439	11 8 23.3	117.03	
11	22 31 23.12	16.149	10 23 17.3	118.65	11 1 3.9	22 31 40.31	16.164	10 21 11.0	118.93	
12	22 37 47.00	15.833	9 35 31.0	120.14	12 1 6.4	22 38 4.50	15.843	9 33 18.2	120.39	
13	22 44 2.67	15.464	8 47 14.5	121.15	13 1 8.7	22 44 20.36	15.469	8 44 55.9	121.37	
14	22 50 8.81	15.037	7 58 40.4	121.59	14 1 10.8	22 50 26.55	15.036	7 56 17.1	121.77	
15	22 56 3.91	14.544	7 10 3.3	121.40	15 1 12.7	22 56 21.54	14.536	7 7 36.3	121.53	
16	23 1 46.37	13.982	6 21 38.5	120.54	16 1 14.5	23 2 3.72	13.967	6 19 8.9	120.61	
17	23 7 14.42	13.342	5 33 48.6	118.91	17 1 16.1	23 7 31.31	13.319	5 31 12.9	118.92	
18	23 12 26.15	12.621	4 46 37.6	116.45	18 1 17.3	23 12 42.38	12.590	4 44 7.7	116.38	
19	23 17 19.55	11.815	4 0 41.0	113.12	19 1 18.2	23 17 34.93	11.776	3 58 13.7	112.97	
20	23 21 52.57	10.922	3 16 15.3	108.86	20 1 18.8	23 22 6.88	10.874	3 13 52.5	108.63	
21	23 26 3.09	9.941	2 33 43.2	103.67	21 1 19.0	23 26 16.15	9.885	2 31 26.8	103.36	
22	23 29 49.04	8.875	1 53 26.9	97.52	22 1 18.8	23 30 0.67	8.812	1 51 19.0	97.13	
23	23 33 8.43	7.728	1 15 49.9	90.41	23 1 18.2	23 33 18.47	7.659	1 13 52.3	89.95	
24	23 35 59.42	6.509	0 41 14.6	82.38	24 1 17.1	23 36 7.75	6.436	0 39 29.0	81.85	
25	23 38 20.35	5.226	- 0 10 2.8	73.46	25 1 15.5	23 38 26.89	5.151	- 0 8 30.6	72.88	
26	23 40 9.86	3.893	+ 0 17 24.8	63.71	26 1 13.3	23 40 14.59	3.818	+ 0 18 42.4	63.09	
27	23 41 26.93	2.525	+ 0 40 49.6	53.24	27 1 10.6	23 41 29.87	2.452	+ 0 41 52.0	52.60	
28	23 42 10.93	+ 1.141	+ 0 59 55.1	42.12	28 1 7.4	23 42 12.18	+ 1.076	+ 1 0 42.1	41.49	
29	23 42 21.73	- 0.239	- 1 14 27.5	30.50	29 1 3.6	23 42 21.85	- 0.298	- 1 14 59.5	29.90	
30	23 41 59.70	1.590	+ 1 24 16.5	18.53	30 0 59.3	23 41 58.10	1.640	+ 1 24 34.5	17.98	
31	23 41 5.85	- 2.887	+ 1 29 15.6	+ 6.39	31 0 54.5	23 41 3.21	- 2.925	+ 1 29 21.1	+ 5.91	

Date.	FOR WASHINGTON MEAN NOON.					FOR MERIDIAN TRANSIT.				
1881.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.	
Mar. 1	^h 23 ^m 42 ^s 21.73	- 0.239	+ 1° 14' 27.5"	+30.50	^d 1 ^h 1 ^m 3.6	^h 23 ^m 42 ^s 21.45	-0.298	+ 1° 14' 59.5"	+29.90	
2	23 41 59.70	1.590	1 24 16.5	18.53	2 0 59.3	23 41 58.10	1.640	1 24 34.5	17.98	
3	23 41 5.85	2.887	1 29 15.6	+ 6.39	3 0 54.5	23 41 3.21	2.925	1 29 21.1	+ 5.91	
4	23 39 41.77	4.104	1 29 23.5	- 5.72	4 0 49.1	23 39 38.39	4.128	1 29 18.6	- 6.11	
5	23 37 49.72	5.214	1 24 43.3	17.57	5 0 43.3	23 37 45.94	5.224	1 24 30.4	17.85	
6	23 35 32.54	6.193	1 15 24.1	28.93	6 0 37.1	23 35 28.70	6.189	1 15 6.0	29.08	
7	23 32 53.68	7.017	1 1 40.8	39.53	7 0 30.5	23 32 50.09	7.000	1 1 20.6	39.56	
8	23 29 57.09	7.668	0 43 54.3	49.17	8 0 23.7	23 29 54.05	7.640	0 43 34.8	49.08	
9	23 26 47.10	8.132	+ 0 22 30.4	57.61	9 0 16.6	23 26 44.85	8.096	+ 0 22 14.4	57.42	
10	23 23 28.29	8.402	- 0 2 0.2	64.69	10 0 9.4	23 23 26.97	8.361	- 0 2 10.3	64.41	
					11 0 2.1	23 20 5.04	8.435	0 29 5.5	69.94	
11	23 20 5.34	8.478	0 29 3.0	70.28	11 23 54.8	23 16 43.59	8.323	0 57 54.7	73.92	
12	23 16 42.87	8.364	0 58 1.1	74.30	12 23 47.6	23 13 26.93	8.039	1 28 1.2	76.37	
13	23 13 25.26	8.075	1 28 17.0	76.76	13 23 40.6	23 10 19.00	7.599	1 58 48.3	77.32	
14	23 10 16.53	7.628	1 59 13.4	77.70	14 23 33.7	23 7 23.30	7.022	2 29 41.3	76.88	
15	23 7 20.21	7.039	2 30 15.1	77.22	15 23 27.1	23 4 42.86	6.332	3 0 8.2	75.18	
16	23 4 39.37	6.343	3 0 49.6	75.46	16 23 20.8	23 2 20.11	5.552	3 29 40.6	72.36	
17	23 2 16.47	5.553	3 30 28.1	72.58	17 23 14.8	23 0 16.91	4.705	3 57 54.0	68.61	
18	23 0 13.37	4.696	3 58 45.9	68.76	18 23 9.2	22 58 34.67	3.811	4 24 28.0	64.11	
19	22 58 31.44	3.793	4 25 22.5	64.18	19 23 3.9	22 57 14.22	2.890	4 49 6.5	59.00	
20	22 57 11.52	2.864	4 50 1.7	59.00	20 22 59.0	22 56 16.01	1.960	5 11 36.7	53.45	
21	22 56 14.03	1.927	5 12 31.0	53.38	21 22 54.5	22 55 40.10	1.034	5 31 49.5	47.58	
22	22 55 38.99	0.995	5 32 41.4	47.45	22 22 50.3	22 55 26.26	-0.122	5 49 38.9	41.51	
23	22 55 26.15	-0.079	5 50 27.0	41.33	23 22 46.5	22 55 34.04	+0.766	6 5 1.1	35.34	
24	22 55 35.02	+0.813	6 5 44.3	35.11	24 22 43.1	22 56 2.78	1.623	6 17 54.9	29.14	
25	22 56 4.92	1.672	6 18 32.1	28.87	25 22 40.0	22 56 51.68	2.445	6 28 20.2	22.97	
26	22 56 54.99	2.495	6 28 50.6	22.67	26 22 37.2	22 57 59.87	3.230	6 36 18.0	16.87	
27	22 58 4.37	3.280	6 36 41.0	16.55	27 22 34.7	22 59 26.40	3.975	6 41 50.6	10.88	
28	22 59 32.09	4.024	6 42 5.8	10.55	28 22 32.5	23 1 10.32	4.680	6 45 1.3	- 5.03	
29	23 1 17.19	4.728	6 45 8.5	- 4.69	29 22 30.5	23 3 10.68	5.344	6 45 53.6	+ 0.67	
30	23 3 18.69	5.391	6 45 52.3	+ 1.02	30 22 28.8	23 5 26.53	5.970	6 44 30.9	6.20	
31	23 5 35.64	6.015	6 44 21.1	6.55	31 22 27.5	23 7 56.95	6.559	6 40 57.3	11.57	
Apr. 1	23 8 7.11	6.602	6 40 39.1	11.92	1 22 26.3	23 10 41.09	7.113	6 35 16.7	16.78	
2	23 10 52.24	7.153	6 34 50.2	17.12	2 22 25.3	23 13 38.09	7.631	6 27 33.3	21.81	
3	23 13 50.17	7.669	6 26 58.6	22.15	3 22 24.4	23 16 47.16	8.120	6 17 51.2	26.68	
4	23 17 0.12	8.155	6 17 8.4	27.01	4 22 23.8	23 20 7.61	8.580	6 6 14.1	31.40	
5	23 20 21.39	8.613	6 5 23.4	31.72	5 22 23.4	23 23 38.78	9.013	5 52 45.5	35.95	
6	23 23 53.31	9.043	5 51 47.3	36.26	6 22 23.2	23 27 20.01	9.420	5 37 29.3	40.36	
7	23 27 35.24	9.448	5 36 23.9	40.66	7 22 23.1	23 31 10.77	9.806	5 20 28.9	44.64	
8	23 31 26.63	9.831	5 19 16.6	44.92	8 22 23.2	23 35 10.55	10.171	5 1 47.6	48.79	
9	23 35 26.98	10.194	5 0 28.7	49.05	9 22 23.4	23 39 18.85	10.518	4 41 28.7	52.78	
10	23 39 35.81	10.539	4 40 3.5	53.03	10 22 23.7	23 43 35.27	10.849	4 19 35.3	56.65	
11	23 43 52.71	10.867	4 18 4.2	56.89	11 22 24.1	23 47 59.48	11.166	3 56 10.3	60.41	
12	23 48 17.33	11.182	3 54 33.6	60.64	12 22 24.7	23 52 31.12	11.470	3 31 16.4	64.06	
13	23 52 49.35	11.485	3 29 34.5	64.27	13 22 25.4	23 57 9.95	11.763	3 4 56.3	67.60	
14	23 57 28.50	11.776	3 3 9.6	67.79	14 22 26.2	0 1 55.68	12.046	2 37 12.7	71.02	
15	0 2 14.51	12.057	2 35 21.5	71.20	15 22 27.1	0 6 48.11	12.322	2 8 8.0	74.34	
16	0 7 7.19	12.332	2 6 12.9	74.50	16 22 28.2	0 11 47.12	12.593	1 37 44.7	77.55	
17	0 12 6.40	12.601	1 35 46.0	77.70	17 22 29.3	0 16 52.56	12.859	1 6 5.3	80.69	
18	0 17 12.00	12.865	1 4 3.3	80.82	18 22 30.6	0 22 4.36	13.122	- 0 33 12.0	83.73	
19	0 22 23.91	13.126	- 0 31 7.2	83.84	19 22 31.9	0 27 22.43	13.392	+ 0 0 52.9	86.67	
20	0 27 42.06	13.385	+ 0 3 0.1	86.76	20 22 33.4	0 32 46.74	13.643	0 36 7.1	89.51	
21	0 33 6.42	13.644	0 38 16.3	89.58	21 22 34.9	0 38 17.29	13.904	1 12 28.5	92.26	
22	0 38 36.99	13.904	1 14 39.2	92.31	22 22 36.6	0 43 54.14	14.167	1 49 54.6	94.90	
23	0 44 13.82	14.165	1 52 6.4	94.94	23 22 38.4	0 49 37.33	14.433	2 28 23.1	97.46	
24	0 49 56.95	14.430	2 30 35.5	97.48	24 22 40.3	0 55 26.96	14.704	3 7 51.7	99.92	
25	0 55 46.48	14.699	3 10 4.3	99.92	25 22 42.3	1 1 23.14	14.979	3 48 18.2	102.26	
26	1 1 42.53	14.973	3 50 30.5	102.24	26 22 44.4	1 7 26.02	15.262	4 29 39.5	104.49	
27	1 7 45.24	15.242	4 31 51.1	104.45	27 22 46.6	1 13 35.76	15.551	5 11 53.1	106.62	
28	1 13 54.77	15.542	5 14 3.4	106.56	28 22 48.9	1 19 52.53	15.849	5 54 56.2	108.64	
29	1 20 11.29	15.838	5 57 4.8	108.55	29 22 51.3	1 26 16.58	16.156	6 38 46.1	110.51	
30	1 26 35.04	16.143	6 40 52.4	110.40	30 22 53.9	1 32 48.11	16.474	7 23 19.4	112.23	
31	1 33 6.22	+16.458	+ 7 25 22.8	+112.10	31 22 56.6	1 39 27.36	+16.801	+ 8 8 32.0	+113.80	

Date.	FOR WASHINGTON MEAN NOON.					FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.	
1881.										
May 1	h m s		° ' "		d h m	h m s		° ' "		
1	1 33 6.22	+16.458	+ 7 25 22.8	+112.10	1 22 56.6	1 39 27.36	+16.801	+ 8 8 32.0	+113.80	
2	1 39 45.07	16.783	8 10 32.0	113.65	2 22 59.5	1 46 14.58	17.138	8 54 20.5	115.20	
3	1 46 31.84	17.118	8 56 16.5	115.03	3 23 2.5	1 53 10.06	17.487	9 40 40.3	116.41	
4	1 53 26.80	17.464	9 42 31.7	116.21	4 23 5.6	2 0 14.02	17.846	10 27 26.5	117.40	
5	2 0 30.18	17.820	10 29 12.8	117.18	5 23 8.8	2 7 26.72	18.216	11 14 33.8	118.16	
6	2 7 42.23	18.186	11 16 14.4	117.91	6 23 12.2	2 14 48.40	18.594	12 1 56.0	118.65	
7	2 15 3.17	18.561	12 3 30.3	118.38	7 23 15.8	2 22 19.24	18.979	12 49 26.7	118.85	
8	2 22 33.19	18.943	12 50 54.1	118.55	8 23 19.5	2 29 59.42	19.370	13 36 58.4	118.73	
9	2 30 12.46	19.330	13 38 18.3	118.41	9 23 23.4	2 38 49.02	19.764	14 24 23.0	118.26	
10	2 38 1.05	19.720	14 25 35.0	117.92	10 23 27.4	2 45 48.09	20.158	15 11 31.4	117.38	
11	2 45 59.01	20.109	15 12 35.0	117.02	11 23 31.6	2 53 56.54	20.546	15 58 13.8	116.07	
12	2 54 6.28	20.493	15 59 8.6	115.70	12 23 36.0	3 2 14.24	20.926	16 44 19.4	114.31	
13	3 2 22.64	20.868	16 45 5.1	113.93	13 23 40.5	3 10 40.85	21.290	17 29 36.9	112.07	
14	3 10 47.80	21.228	17 30 13.3	111.68	14 23 45.1	3 19 16.03	21.633	18 13 54.5	109.31	
15	3 19 21.40	21.568	18 14 21.6	108.92	15 23 49.8	3 27 59.12	21.951	18 56 59.6	106.03	
16	3 28 2.83	21.880	18 57 17.5	105.65	16 23 54.7	3 36 49.42	22.234	19 38 39.6	102.22	
17	3 36 51.37	22.159	19 38 48.6	101.86	17 23 59.7	3 45 46.04	22.477	20 18 42.0	97.87	
18	3 45 46.15	22.399	20 18 42.5	97.55						
19	3 54 46.16	22.594	20 56 47.1	92.75	19 0 4.8	3 54 47.96	22.675	20 56 54.5	93.06	
20	4 3 50.26	22.739	21 32 51.0	87.50	20 0 9.9	4 3 54.02	22.821	21 33 5.5	87.78	
21	4 12 57.20	22.831	22 6 43.8	81.83	21 0 15.1	4 13 2.95	22.914	22 7 4.4	82.07	
22	4 22 5.68	22.866	22 38 16.1	75.81	22 0 20.3	4 22 13.42	22.949	22 38 41.8	76.00	
23	4 31 14.32	22.844	23 7 20.2	69.49	23 0 25.5	4 31 24.04	22.926	23 7 49.8	69.63	
24	4 40 21.74	22.764	23 33 50.0	62.95	24 0 30.7	4 40 33.40	22.844	23 34 22.1	63.03	
25	4 49 26.56	22.629	23 57 40.8	56.26	25 0 35.9	4 49 40.09	22.706	23 58 14.3	56.29	
26	4 58 27.51	22.440	24 18 50.0	49.49	26 0 41.0	4 58 42.83	22.513	24 19 23.7	49.47	
27	5 7 23.29	22.200	24 37 16.3	42.71	27 0 46.0	5 7 40.30	22.268	24 37 48.9	42.64	
28	5 16 12.74	21.914	24 53 0.4	35.98	28 0 50.9	5 16 31.31	21.977	24 53 30.8	35.87	
29	5 24 54.80	21.584	25 6 3.9	29.34	29 0 55.6	5 25 14.81	21.641	25 6 31.0	29.19	
30	5 33 28.49	21.216	25 16 29.9	22.87	30 1 0.2	5 33 49.80	21.267	25 16 52.8	22.68	
31	5 41 52.99	20.820	25 24 23.0	16.58	31 1 4.7	5 42 15.44	20.864	25 24 40.8	16.36	
June 1	5 50 7.47	20.386	25 29 47.6	10.51	1 1 9.0	5 50 36.92	20.424	25 29 59.6	10.26	
2	5 58 11.30	19.929	25 32 49.5	+ 4.69	2 1 13.1	5 58 35.58	19.961	25 32 55.1	+ 4.42	
3	6 6 3.87	19.449	25 33 34.8	- 0.87	3 1 17.1	6 6 28.85	19.474	25 33 33.6	- 1.16	
4	6 13 44.72	18.951	25 32 10.1	6.15	4 1 20.9	6 14 10.24	18.970	25 32 1.7	6.45	
5	6 21 13.38	18.436	25 28 42.1	11.14	5 1 24.4	6 21 39.29	18.449	25 28 26.2	11.45	
6	6 28 29.52	17.907	25 23 17.8	15.83	6 1 27.7	6 28 55.67	17.914	25 22 54.5	16.14	
7	6 35 32.80	17.364	25 16 4.4	20.24	7 1 30.8	6 35 59.04	17.365	25 15 33.6	20.55	
8	6 42 22.91	16.810	25 7 8.8	24.35	8 1 33.7	6 42 49.12	16.806	25 6 30.6	24.65	
9	6 48 59.63	16.248	24 56 38.1	28.17	9 1 36.4	6 49 25.69	16.239	24 55 52.7	28.47	
10	6 55 22.75	15.677	24 44 39.2	31.70	10 1 38.8	6 55 48.53	15.663	24 43 46.8	31.99	
11	7 1 32.05	15.096	24 31 19.1	34.94	11 1 41.0	7 1 57.43	15.077	24 30 20.1	35.21	
12	7 7 27.31	14.508	24 16 44.6	37.89	12 1 43.0	7 7 52.18	14.484	24 15 39.4	38.14	
13	7 13 8.38	13.912	24 1 2.4	40.58	13 1 44.7	7 13 32.61	13.884	23 59 51.5	40.81	
14	7 18 35.05	13.309	23 44 19.1	42.99	14 1 46.2	7 18 58.56	13.277	23 43 2.9	43.20	
15	7 23 47.16	12.698	23 26 41.1	45.13	15 1 47.4	7 24 9.84	12.662	23 25 20.2	45.31	
16	7 28 44.49	12.078	23 8 14.9	47.01	16 1 48.4	7 29 6.27	12.038	23 6 49.9	47.16	
17	7 33 26.82	11.448	22 49 6.9	48.62	17 1 49.1	7 33 47.60	11.405	22 47 38.4	48.75	
18	7 37 53.95	10.810	22 29 23.5	49.96	18 1 49.6	7 38 13.64	10.764	22 27 52.1	50.07	
19	7 42 5.63	10.162	22 9 10.8	51.05	19 1 49.8	7 42 24.18	10.112	22 7 37.3	51.13	
20	7 46 1.62	9.502	21 48 35.0	51.88	20 1 49.8	7 46 18.97	9.450	21 47 0.0	51.93	
21	7 49 41.62	8.830	21 27 42.4	52.46	21 1 49.5	7 49 57.69	8.776	21 26 6.6	52.48	
22	7 53 5.36	8.146	21 6 39.2	52.77	22 1 48.9	7 53 20.10	8.090	21 5 3.3	52.76	
23	7 56 12.54	7.450	20 45 31.6	52.82	23 1 48.1	7 56 25.92	7.392	20 43 56.4	52.78	
24	7 59 2.83	6.739	20 24 25.9	52.61	24 1 47.0	7 59 14.80	6.680	20 22 52.1	52.54	
25	8 1 35.90	6.015	20 3 28.4	52.14	25 1 45.6	8 1 46.43	5.955	20 1 56.7	52.04	
26	8 3 51.42	5.277	19 42 45.4	51.40	26 1 43.9	8 4 0.51	5.217	19 41 16.4	51.27	
27	8 5 49.07	4.525	19 22 23.3	50.40	27 1 41.9	8 5 56.70	4.466	19 20 57.8	50.24	
28	8 7 28.52	3.760	19 2 28.5	49.12	28 1 39.6	8 7 34.71	3.701	19 1 7.1	48.94	
29	8 8 49.47	2.983	18 43 7.5	47.58	29 1 37.0	8 8 54.24	2.925	18 41 50.7	47.38	
30	8 9 51.64	2.196	18 24 26.5	45.78	30 1 34.1	8 9 55.04	2.140	18 23 14.8	45.56	
31	8 10 34.82	+ 1.402	+ 18 6 32.2	- 43.70	31 1 30.9	8 10 36.90	+ 1.349	+ 18 5 26.1	- 43.46	

Date. 1881.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
July 1	8 10 34.82	+ 1.402	18 6 32.2	-43.70	1 1 30.9	8 10 36.90	+ 1.349	18 5 26.1	-43.46
2	8 10 58.88	+ 0.603	17 49 30.9	41.36	2 1 27.3	8 10 59.72	+ 0.553	17 48 30.8	41.10
3	8 11 3.76	- 0.196	17 33 28.8	38.76	3 1 23.4	8 11 3.45	- 0.242	17 32 35.0	38.49
4	8 10 49.49	0.992	17 18 32.2	35.92	4 1 19.2	8 10 48.15	1.032	17 17 44.9	35.65
5	8 10 16.25	1.775	17 4 46.8	32.83	5 1 14.7	8 10 14.01	1.809	17 4 6.0	32.56
6	8 9 24.41	2.541	16 52 18.1	29.52	6 1 9.9	8 9 21.43	2.569	16 51 43.8	29.25
7	8 8 14.49	3.280	16 41 11.4	26.01	7 1 4.8	8 8 10.93	3.301	16 40 43.4	25.75
8	8 6 47.26	3.983	16 31 31.1	22.32	8 0 59.4	8 6 43.31	3.996	16 31 8.9	22.08
9	8 5 3.60	4.640	16 23 21.5	18.47	9 0 53.8	8 4 59.52	4.645	16 23 5.1	18.25
10	8 3 5.02	5.239	16 16 45.5	14.51	10 0 47.8	8 3 0.83	5.236	16 16 33.9	14.32
11	8 0 52.76	5.771	16 11 45.6	10.46	11 0 41.7	8 0 48.74	5.760	16 11 38.3	10.30
12	7 58 28.63	6.225	16 8 23.6	6.37	12 0 35.4	7 58 24.95	6.208	16 8 19.8	6.24
13	7 55 34.69	6.588	16 6 30.8	- 2.28	13 0 28.9	7 55 51.50	6.565	16 6 38.7	- 2.19
14	7 53 13.20	6.852	16 6 33.5	+ 1.75	14 0 22.3	7 53 10.65	6.824	16 6 34.2	+ 1.80
15	7 50 26.66	7.007	16 8 3.1	5.70	15 0 15.6	7 50 24.84	6.976	16 8 4.6	5.71
16	7 47 37.76	7.049	16 11 5.8	9.51	16 0 8.9	7 47 36.72	7.016	16 11 7.2	9.49
17	7 44 49.26	6.973	16 15 38.0	13.14	17 0 2.2	7 44 49.01	6.941	16 15 38.5	13.09
18	7 42 4.03	6.776	16 21 34.7	16.55	17 23 55.6	7 42 4.54	6.746	16 21 33.5	16.47
19	7 39 24.97	6.459	16 28 50.4	19.72	18 23 49.0	7 39 26.16	6.433	16 28 46.8	19.61
20	7 36 54.91	6.027	16 37 18.7	22.59	19 23 42.5	7 36 56.66	6.007	16 37 12.1	22.46
21	7 34 36.57	5.483	16 46 52.4	25.16	20 23 36.3	7 34 38.74	5.470	16 46 42.5	25.02
22	7 32 32.54	4.836	16 57 23.6	27.38	21 23 30.3	7 32 34.94	4.831	16 57 10.1	27.23
23	7 30 45.22	4.092	17 8 44.0	29.26	22 23 24.6	7 30 47.64	4.096	17 8 26.8	29.11
24	7 29 16.78	3.266	17 20 45.0	30.76	23 23 19.2	7 29 19.01	3.279	17 20 24.1	30.61
25	7 28 9.13	2.361	17 33 17.7	31.89	24 23 14.1	7 28 10.95	2.383	17 32 53.3	31.75
26	7 27 23.95	1.394	17 46 12.7	32.63	25 23 9.4	7 27 25.14	1.424	17 45 45.2	32.51
27	7 27 2.62	- 0.375	17 59 20.8	32.96	26 23 5.1	7 27 2.98	- 0.413	17 58 50.5	32.86
28	7 27 6.29	+ 0.688	18 12 31.5	32.88	27 23 1.9	7 27 5.64	+ 0.642	18 11 59.3	32.81
29	7 27 35.90	1.784	18 25 35.6	32.38	28 22 57.8	7 27 34.07	1.732	18 25 2.0	32.34
30	7 25 32.12	2.904	18 38 22.6	31.46	29 22 54.8	7 28 28.98	2.848	18 37 48.4	31.46
31	7 23 55.42	4.040	18 50 42.4	30.10	30 22 52.2	7 29 50.88	3.980	18 50 8.3	30.13
Aug. 1	7 22 55.42	4.040	18 50 42.4	30.10	31 22 50.1	7 31 40.09	5.123	19 1 51.1	28.37
2	7 31 46.11	5.185	19 2 24.2	28.30	1 22 48.4	7 33 56.75	6.267	19 12 46.3	26.15
3	7 34 4.28	6.329	19 13 17.5	26.05	2 22 47.2	7 36 40.82	7.406	19 22 42.8	23.48
4	7 36 49.85	7.468	19 23 11.2	23.35	3 22 46.5	7 39 52.12	8.534	19 31 29.8	20.34
5	7 40 2.62	8.594	19 31 54.6	20.18	4 22 46.2	7 43 30.28	9.642	19 38 55.9	16.74
6	7 43 42.18	9.698	19 39 16.4	16.55	5 22 46.3	7 47 34.75	10.726	19 44 49.9	12.67
7	7 47 47.95	10.778	19 45 5.3	12.45	6 22 46.8	7 52 4.90	11.780	19 49 0.7	8.14
8	7 52 19.28	11.826	19 49 10.5	7.90	7 22 47.8	7 56 59.89	12.795	19 51 17.4	+ 3.17
9	7 57 15.30	12.834	19 51 21.1	+ 2.91	8 22 49.2	8 2 18.71	13.765	19 51 29.7	- 2.22
10	8 2 34.96	13.796	19 51 27.0	- 2.49	9 22 51.0	8 8 0.17	14.631	19 49 27.7	8.00
11	8 8 17.06	14.703	19 49 18.4	8.28	10 22 53.1	8 14 2.90	15.537	19 45 2.5	14.15
12	8 14 20.23	15.550	19 44 46.6	14.42	11 22 55.5	8 20 25.37	16.324	19 38 6.2	20.59
13	8 20 42.91	16.328	19 37 44.0	20.84	12 22 58.2	8 27 5.88	17.038	19 28 32.5	27.26
14	8 27 23.47	17.033	19 28 4.4	27.49	13 23 1.2	8 34 2.58	17.672	19 16 16.9	34.09
15	8 34 19.87	17.658	19 15 43.4	34.29	14 23 4.4	8 41 13.48	18.223	19 1 16.0	41.01
16	8 41 30.34	18.200	19 0 38.0	41.18	15 23 7.8	8 48 36.58	18.688	18 43 29.0	47.91
17	8 48 52.79	18.657	18 42 47.4	48.04	16 23 11.4	8 56 9.78	19.064	18 22 57.2	54.72
18	8 56 25.18	19.027	18 22 13.0	54.81	17 23 15.2	9 3 50.99	19.355	17 59 43.8	61.37
19	9 4 5.42	19.312	17 58 58.0	61.41	18 23 19.0	9 11 38.18	19.564	17 33 53.4	67.77
20	9 11 51.51	19.516	17 33 7.2	67.77	19 23 22.9	9 19 29.41	19.693	17 5 33.0	73.87
21	9 19 41.55	19.642	17 4 47.5	73.82	20 23 26.8	9 27 22.87	19.750	16 34 50.7	79.60
22	9 27 33.75	19.697	16 34 6.9	79.51	21 23 30.8	9 35 16.90	19.742	16 1 55.4	84.93
23	9 35 26.48	19.688	16 1 14.2	84.80	22 23 34.7	9 43 10.04	19.677	15 26 57.4	89.83
24	9 43 18.30	19.622	15 26 19.7	89.67	23 23 38.6	9 51 1.01	19.562	14 50 7.0	94.29
25	9 51 7.96	19.508	14 49 33.5	94.10	24 23 42.4	9 58 48.73	19.407	14 11 34.8	98.31
26	9 58 54.38	19.354	14 11 6.2	98.10	25 23 46.2	10 6 32.31	19.218	13 31 31.6	101.88
27	10 6 36.70	19.167	13 31 8.3	101.65	26 23 49.9	10 14 11.02	19.003	12 50 7.8	105.03
28	10 14 14.20	18.954	12 49 50.2	104.79	27 23 53.5	10 21 44.31	18.768	12 7 33.3	107.77
29	10 21 46.33	18.721	12 7 21.7	107.52	28 23 57.1	10 29 11.77	18.519	11 23 57.6	110.13
30	10 29 12.68	18.474	11 23 52.2	109.88	29 23 57.1				
31	10 36 33.01	18.218	10 39 30.5	111.88	30 0 0.5	10 36 33.15	18.261	10 39 29.7	112.14
31	10 43 47.12	+17.957	+ 9 54 24.7	-113.55	31 0 3.8	10 43 48.24	+17.997	+ 9 54 17.6	-113.81

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	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
Sept. 1	h m s	s	° ' "	"	d h m	h m s	s	° ' "	"
2	10 50 54.92	+17.693	+ 9 8 42.7	-114.91	1 0 7.0	10 50 56.96	+17.731	+ 9 8 29.4	-115.16
3	10 57 56.42	17.432	8 22 31.3	116.00	2 0 10.0	10 57 59.33	17.467	8 22 11.9	116.25
4	11 4 51.68	17.174	7 35 56.8	116.83	3 0 13.0	11 4 55.40	17.207	7 35 31.5	117.07
5	11 11 40.80	16.921	6 49 5.0	117.44	4 0 15.9	11 11 45.28	16.952	6 48 34.0	117.68
6	11 18 23.94	16.675	6 2 1.2	117.84	5 0 18.7	11 18 29.13	16.703	6 1 24.6	118.07
7	11 25 1.26	16.436	5 14 50.4	118.04	6 0 21.4	11 25 7.10	16.462	5 14 8.4	118.26
8	11 31 32.95	16.206	4 27 36.5	118.08	7 0 23.9	11 31 39.41	16.231	4 26 49.4	118.29
9	11 37 59.24	15.985	3 40 23.8	117.96	8 0 26.4	11 38 6.28	16.009	3 39 31.8	118.16
10	11 44 20.33	15.774	2 53 15.6	117.70	9 0 28.9	11 44 27.92	15.796	2 52 19.0	117.89
11	11 50 36.47	15.572	2 6 15.3	117.30	10 0 31.2	11 50 44.57	15.593	2 5 14.3	117.48
12	11 56 47.85	15.378	1 19 25.9	116.80	11 0 33.4	11 56 56.43	15.399	1 18 20.8	116.97
13	12 2 54.73	15.195	+ 0 32 49.9	116.18	12 0 35.6	12 3 3.75	15.213	+ 0 31 41.0	116.34
14	12 8 57.29	15.021	- 0 13 30.0	115.46	13 0 37.7	12 9 6.73	15.038	- 0 14 42.5	115.61
15	12 14 55.79	14.855	0 59 31.7	114.65	14 0 39.7	12 15 5.62	14.871	1 0 47.6	114.79
16	12 20 50.41	14.698	1 45 12.8	113.77	15 0 41.7	12 21 0.61	14.713	1 46 31.8	113.90
17	12 26 41.34	14.548	2 30 31.8	112.80	16 0 43.6	12 26 51.90	14.563	2 31 53.7	112.92
18	12 32 28.79	14.407	3 15 26.4	111.74	17 0 45.5	12 32 39.69	14.421	3 16 51.0	111.85
19	12 38 12.92	14.272	3 59 55.0	110.63	18 0 47.3	12 38 24.14	14.285	4 1 22.1	110.73
20	12 43 53.89	14.144	4 43 56.0	109.45	19 0 49.0	12 44 5.42	14.157	4 45 25.3	109.54
21	12 49 31.87	14.022	5 27 27.9	108.20	20 0 50.7	12 49 43.70	14.034	5 29 59.2	108.28
22	12 55 6.98	13.905	6 10 28.9	106.88	21 0 52.3	12 55 19.10	13.917	6 12 2.0	106.95
23	13 0 39.33	13.793	6 52 57.8	105.51	22 0 53.9	13 0 51.72	13.804	6 54 32.5	105.57
24	13 6 9.07	13.685	7 34 52.8	104.07	23 0 55.5	13 6 21.69	13.696	7 36 28.9	104.12
25	13 11 36.25	13.581	8 16 12.8	102.58	24 0 57.0	13 11 49.13	13.592	8 17 50.1	102.63
26	13 17 0.97	13.479	8 56 56.4	101.03	25 0 58.5	13 17 14.09	13.489	8 58 34.7	101.07
27	13 22 23.26	13.379	9 37 1.8	99.41	26 0 59.9	13 22 36.61	13.388	9 38 40.9	99.44
28	13 27 43.18	13.281	10 16 27.7	97.74	27 1 1.3	13 27 56.74	13.290	10 18 7.4	97.76
29	13 33 0.73	13.182	10 55 12.8	96.01	28 1 2.6	13 33 14.48	13.190	10 56 52.9	96.02
30	13 38 15.93	13.083	11 33 15.5	94.21	29 1 3.9	13 38 29.86	13.091	11 34 55.8	94.21
Oct. 1	13 43 28.74	12.983	12 10 34.2	92.34	30 1 5.2	13 43 42.84	12.990	12 12 14.4	92.33
2	13 48 39.09	12.880	12 47 7.2	90.40	1 1 6.4	13 48 53.35	12.886	12 48 47.2	90.38
3	13 53 46.93	12.772	13 22 53.1	88.40	2 1 7.6	13 54 1.33	12.777	13 24 32.7	88.37
4	13 58 52.12	12.659	13 57 50.0	86.32	3 1 8.8	13 59 6.63	12.663	13 59 28.9	86.28
5	14 4 54.53	12.540	14 31 56.1	84.16	4 1 9.9	14 4 9.13	12.543	14 33 34.1	84.11
6	14 8 53.97	12.412	15 5 9.3	81.92	5 1 10.9	14 9 8.63	12.414	15 6 46.1	81.86
7	14 13 50.24	12.274	15 37 27.8	79.60	6 1 11.9	14 14 4.94	12.275	15 39 3.2	79.53
8	14 18 43.04	12.124	16 8 49.2	77.17	7 1 12.8	14 18 57.75	12.124	16 10 22.9	77.09
9	14 23 32.07	11.960	16 39 11.3	74.65	8 1 13.7	14 23 46.75	11.958	16 40 43.0	74.56
10	14 28 16.97	11.778	17 8 31.4	72.01	9 1 14.5	14 28 31.58	11.774	17 10 0.9	71.91
11	14 32 57.27	11.577	17 36 46.8	69.25	10 1 15.2	14 33 11.76	11.571	17 38 13.7	69.14
12	14 37 32.50	11.354	18 3 54.7	66.37	11 1 15.9	14 37 46.84	11.346	18 5 18.6	66.24
13	14 42 2.06	11.105	18 29 51.9	63.36	12 1 16.4	14 42 16.20	11.095	18 31 12.5	63.22
14	14 46 25.29	10.825	18 54 34.8	60.19	13 1 16.9	14 46 39.15	10.812	18 55 51.8	60.03
15	14 50 41.39	10.512	19 17 59.5	56.85	14 1 17.2	14 50 54.90	10.495	19 19 12.5	56.67
16	14 54 49.53	10.160	19 40 2.0	53.32	15 1 17.4	14 55 2.61	10.140	19 41 10.6	53.12
17	14 58 48.69	9.764	20 0 37.5	49.60	16 1 17.4	14 59 1.27	9.741	20 1 41.4	49.39
18	15 2 37.76	9.317	20 19 41.1	45.66	17 1 17.3	15 2 49.74	9.290	20 20 39.8	45.43
19	15 6 15.47	8.816	20 37 7.0	41.46	18 1 16.9	15 6 26.76	8.785	20 38 0.0	41.22
20	15 9 40.43	8.252	20 52 48.9	36.98	19 1 16.4	15 9 50.92	8.216	20 53 35.8	36.72
21	15 12 51.01	7.618	21 6 39.8	32.20	20 1 15.6	15 13 0.59	7.578	21 7 20.2	31.92
22	15 15 45.50	6.908	21 18 32.0	27.08	21 1 14.6	15 15 54.06	6.863	21 19 5.4	26.78
23	15 18 21.94	6.114	21 28 16.7	21.57	22 1 13.2	15 18 29.38	6.065	21 28 42.8	21.26
24	15 20 38.24	5.228	21 35 44.0	15.64	23 1 11.5	15 20 44.44	5.175	21 36 2.6	15.32
25	15 22 32.14	4.247	21 40 43.6	9.24	24 1 9.5	15 22 37.03	4.191	21 40 54.1	8.91
26	15 24 1.28	3.163	21 43 3.3	- 2.32	25 1 7.0	15 24 4.78	3.104	21 43 5.7	- 1.98
27	15 25 3.12	1.974	21 42 30.4	+ 5.16	26 1 4.1	15 25 5.20	1.914	21 42 24.7	+ 5.49
28	15 25 35.21	+ 0.683	21 38 50.9	13.24	27 1 0.7	15 25 35.87	+ 0.625	21 38 37.3	13.56
29	15 25 35.13	- 0.705	21 31 50.2	21.92	28 0 56.7	15 25 34.43	- 0.759	21 31 29.3	22.21
30	15 25 0.71	2.176	21 21 13.8	31.21	29 0 52.2	15 24 58.79	2.223	21 20 46.5	31.45
31	15 23 50.20	3.704	21 6 47.6	41.05	30 0 47.1	15 23 47.27	3.744	21 6 15.3	41.22
32	15 22 2.53	5.267	20 48 20.0	51.32	31 0 41.3	15 21 58.88	5.289	20 47 44.6	51.40
33	15 19 37.50	- 6.813	- 20 25 42.5	+ 61.83	32 0 35.0	15 19 33.51	- 6.818	- 20 25 6.4	+ 61.80

Date. 1881.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
Nov. 1	h m s	s	° ' "	"	d h m	h m s	s	° ' "	"
	15 19 37.50	- 6.813	20 25 42.5	+ 61.83	1 0 35.0	15 19 33.51	- 6.818	20 25 6.4	+ 61.80
	2 15 16 36.06	8.290	19 58 52.6	72.29	2 0 28.0	15 16 32.17	8.276	19 59 18.7	72.13
	3 15 13 0.70	9.628	19 27 56.5	82.28	3 0 20.5	15 12 57.40	9.594	19 27 28.2	81.97
	4 15 8 55.55	10.762	18 53 11.0	91.32	4 0 12.5	15 8 53.29	10.710	18 52 51.8	90.87
	5 15 4 26.33	11.620	18 15 5.5	98.84	5 0 4.2	15 4 25.53	11.554	18 14 58.6	98.28
					5 23 55.5	14 59 41.37	12.067	17 34 31.4	103.60
	6 14 59 40.46	12.140	17 34 23.7	104.24	6 23 46.7	14 54 49.34	12.207	16 52 26.4	106.37
	7 14 54 46.62	12.280	16 52 2.7	107.02	7 23 38.0	14 49 58.65	11.954	16 9 49.6	106.22
	8 14 49 54.20	12.018	16 9 10.3	106.82	8 23 29.4	14 45 18.69	11.312	15 27 53.3	102.98
	9 14 45 12.87	11.360	15 27 0.4	103.47	9 23 21.1	14 40 58.47	10.318	14 47 50.9	96.74
	10 14 40 51.75	10.343	14 46 47.8	97.07	10 23 13.3	14 37 5.84	9.024	14 10 50.5	87.87
	11 14 36 58.79	9.024	14 9 41.8	88.00	11 23 6.1	14 33 47.17	7.498	13 37 50.3	76.82
	12 14 33 40.43	7.473	13 36 41.2	76.73	12 22 59.5	14 31 7.18	5.816	13 9 36.0	64.18
	13 14 31 1.32	5.768	13 8 31.3	63.90	13 22 53.6	14 29 8.70	4.049	12 46 37.0	50.62
	14 14 29 4.25	3.982	12 45 41.2	50.18	14 22 48.4	14 27 52.97	2.263	12 29 8.7	36.73
	15 14 27 50.32	2.182	12 28 25.1	36.17	15 22 43.9	12 27 19.79	- 0.511	12 17 12.4	23.03
	16 14 27 19.21	- 0.418	12 16 43.6	22.38	16 22 40.1	14 27 27.83	+ 1.167	12 10 38.9	+ 9.89
	17 14 27 29.46	+ 1.260	12 10 26.3	+ 9.21	17 22 37.0	14 28 14.96	2.742	12 9 10.5	- 2.35
	18 14 28 18.83	2.834	12 9 14.3	- 3.03	18 22 34.4	14 29 38.46	4.196	12 12 23.4	13.54
	19 14 29 44.52	4.285	12 12 43.3	14.19	19 22 32.4	14 31 35.36	5.524	12 19 51.1	23.57
	20 14 31 43.49	5.607	12 20 26.1	24.17	20 22 30.9	14 34 2.58	6.723	12 31 5.3	32.41
	21 14 34 12.63	6.799	12 31 53.9	32.94	21 22 29.9	14 36 57.08	7.798	12 45 37.4	40.07
	22 14 37 8.85	7.866	12 46 37.9	40.53	22 22 29.3	14 40 15.98	8.757	13 2 59.7	46.61
	23 14 40 29.27	8.816	13 4 10.5	47.00	23 22 29.0	14 43 56.53	9.606	13 22 46.4	52.11
	24 14 44 11.14	9.637	13 24 5.7	52.43	24 22 29.1	14 47 56.31	10.359	13 44 33.4	56.66
	25 14 48 12.04	10.402	13 45 59.6	56.91	25 22 29.4	14 52 13.07	11.025	14 7 59.1	60.33
	26 14 52 29.74	11.060	14 9 30.4	60.52	26 22 30.0	14 56 44.85	11.613	14 32 43.6	63.23
	27 14 57 2.28	11.641	14 34 18.5	63.36	27 22 30.8	15 1 29.92	12.132	14 58 29.1	65.44
	28 15 1 47.95	12.154	15 0 6.4	65.52	28 22 31.8	15 6 26.72	12.592	15 25 0.1	67.04
	29 15 6 45.22	12.609	15 26 38.6	67.07	29 22 33.0	15 11 33.94	13.002	15 52 2.8	68.09
	30 15 11 52.79	13.014	15 53 41.4	68.08	30 22 34.3	15 16 50.47	13.367	16 19 24.9	68.68
Dec. 1	15 17 9.55	13.375	16 21 2.9	68.63	1 22 35.8	15 22 15.29	13.694	16 46 55.8	68.83
	2 15 22 34.50	13.698	16 48 32.3	68.75	2 22 37.4	15 27 47.54	13.988	17 14 25.9	68.61
	3 15 28 6.79	13.988	17 16 0.2	68.51	3 22 39.1	15 33 26.51	14.255	17 41 46.9	68.07
	4 15 33 45.72	14.252	17 43 18.5	67.95	4 22 40.9	15 39 11.57	14.496	18 8 51.2	67.25
	5 15 39 30.67	14.490	18 10 19.7	67.11	5 22 42.6	15 45 2.18	14.718	18 35 32.7	66.18
	6 15 45 21.10	14.709	18 36 57.7	66.02	6 22 44.8	15 50 57.88	14.922	19 1 45.9	64.88
	7 15 51 16.57	14.911	19 3 7.0	64.71	7 22 46.9	15 56 58.30	15.111	19 27 25.2	63.35
	8 15 57 16.70	15.098	19 28 42.2	63.18	8 22 49.0	16 3 3.06	15.285	19 52 25.6	61.66
	9 16 3 21.14	15.270	19 53 38.3	61.48	9 22 51.2	16 9 11.88	15.449	20 16 43.7	59.82
	10 16 9 29.59	15.432	20 17 52.1	59.64	10 22 53.4	16 15 24.53	15.604	20 40 15.7	57.83
	11 16 15 41.83	15.586	20 41 19.7	57.64	11 22 55.7	16 21 40.78	15.750	21 2 58.3	55.70
	12 16 21 57.63	15.730	21 3 57.8	55.51	12 22 58.1	16 28 0.44	15.887	21 24 48.3	53.46
	13 16 28 16.80	15.866	21 25 43.3	53.27	13 23 0.5	16 34 23.33	16.018	21 45 43.2	51.10
	14 16 34 30.17	15.996	21 46 33.7	50.91	14 23 3.0	16 40 49.29	16.144	22 5 40.2	48.63
	15 16 41 4.59	16.121	22 6 26.3	48.45	15 23 5.6	16 47 18.20	16.264	22 24 37.0	46.09
	16 16 47 32.94	16.240	22 25 18.7	45.91	16 23 8.1	16 53 49.95	16.380	22 42 31.5	43.45
	17 16 54 4.09	16.355	22 43 9.1	43.27	17 23 10.7	17 0 24.42	16.492	22 59 21.7	40.72
	18 17 0 37.94	16.465	22 59 55.0	40.55	18 23 13.4	17 7 1.51	16.599	23 15 5.5	37.91
	19 17 7 14.38	16.571	23 15 34.8	37.75	19 23 16.1	17 13 41.11	16.701	23 29 41.1	35.04
	20 17 13 53.30	16.672	23 30 6.6	34.89	20 23 18.9	17 20 23.13	16.800	23 43 6.9	32.10
	21 17 20 34.62	16.770	23 43 28.8	31.95	21 23 21.7	17 27 7.47	16.895	23 55 21.1	29.08
	22 17 27 18.24	16.865	23 55 39.6	28.94	22 23 24.5	17 33 54.05	16.986	24 6 22.3	26.01
	23 17 34 4.09	16.955	24 6 37.6	25.88	23 23 27.4	17 40 42.79	17.074	24 16 8.9	22.87
	24 17 40 52.06	17.042	24 16 21.3	22.75	24 23 30.3	17 47 33.60	17.159	24 24 39.4	19.68
	25 17 47 42.09	17.126	24 24 49.2	19.57	25 23 33.2	17 54 26.38	17.239	24 31 52.5	16.41
	26 17 54 34.07	17.205	24 31 59.8	16.32	26 23 36.1	18 1 21.04	17.316	24 37 46.8	13.10
	27 18 1 27.91	17.281	24 37 52.0	13.02	27 23 39.1	18 8 17.49	17.388	24 42 21.0	9.74
	28 18 8 23.52	17.353	24 42 24.4	9.67	28 23 42.2	18 15 15.64	17.457	24 45 33.7	6.32
	29 18 15 20.82	17.421	24 45 35.6	6.26	29 23 45.2	18 22 15.40	17.522	24 47 23.7	- 2.85
	30 18 22 19.71	17.486	24 47 24.4	- 2.80	30 23 48.3	18 29 16.67	17.583	24 47 49.8	+ 0.67
	31 18 29 20.10	17.546	24 47 49.7	+ 0.70	31 23 51.4	18 36 19.34	17.638	24 46 50.9	4.24
	32 18 36 21.87	+ 17.601	24 46 50.3	+ 4.25	32 23 54.5	18 43 23.30	+ 17.690	24 44 26.0	+ 7.85

Date. 1881.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
Jan. 1	^h 21 ^m 43 ^s 0.46	+11.548	[°] -15 ['] 34 ["] 42.6	+63.21	^d 1 ^h 2 ^m 57.1	^h 21 ^m 43 ^s 34.54	+11.545	[°] -15 ['] 31 ["] 35.8	+63.36
2	21 47 36.84	11.483	15 9 14.2	64.16	2 2 57.8	21 48 10.85	11.480	15 6 3.9	64.30
3	21 52 11.66	11.418	14 43 23.3	65.09	3 2 58.5	21 52 45.60	11.415	14 40 9.6	65.23
4	21 56 44.92	11.353	14 17 11.0	65.97	4 2 59.1	21 57 18.79	11.350	14 13 54.0	66.10
5	22 1 16.64	11.289	13 50 38.0	66.81	5 2 59.7	22 1 50.43	11.285	13 47 17.8	66.94
6	22 5 46.81	11.225	13 23 45.1	67.62	6 3 0.2	22 6 20.51	11.221	13 20 21.9	67.74
7	22 10 15.46	11.162	12 56 33.2	68.40	7 3 0.7	22 10 49.07	11.158	12 53 7.1	68.51
8	22 14 42.60	11.099	12 29 3.1	69.14	8 3 1.2	22 15 16.11	11.095	12 25 34.2	69.25
9	22 19 8.23	11.037	12 1 15.6	69.85	9 3 1.7	22 19 41.64	11.033	11 57 44.0	69.96
10	22 23 32.38	10.976	11 33 11.4	70.53	10 3 2.1	22 24 5.69	10.971	11 29 37.2	70.63
11	22 27 55.06	10.915	11 4 51.5	71.17	11 3 2.6	22 28 28.27	10.910	11 1 14.8	71.27
12	22 32 16.29	10.855	10 36 16.5	71.78	12 3 3.0	22 32 49.38	10.850	10 32 37.5	71.87
13	22 36 36.10	10.796	10 7 27.2	72.36	13 3 3.4	22 37 9.09	10.791	10 3 46.0	72.45
14	22 40 54.51	10.738	9 38 24.4	72.91	14 3 3.8	22 41 27.38	10.733	9 34 41.1	72.99
15	22 45 11.53	10.680	9 9 9.0	73.42	15 3 4.1	22 45 44.29	10.676	9 5 23.7	73.49
16	22 49 27.18	10.624	8 39 41.5	73.90	16 3 4.4	22 49 59.82	10.619	8 35 54.4	73.96
17	22 53 41.49	10.568	8 10 2.9	74.35	17 3 4.7	22 54 14.01	10.563	8 6 14.0	74.41
18	22 57 54.49	10.513	7 40 13.6	74.77	18 3 5.0	22 58 26.89	10.508	7 36 23.1	74.82
19	23 2 6.19	10.460	7 10 14.7	75.16	19 3 5.3	23 2 38.47	10.455	7 6 22.7	75.21
20	23 6 16.62	10.408	6 40 6.8	75.52	20 3 5.5	23 6 48.78	10.403	6 36 13.4	75.56
21	23 10 25.82	10.357	6 9 50.5	75.85	21 3 5.7	23 10 57.86	10.352	6 5 55.9	75.89
22	23 14 33.80	10.307	5 39 26.7	76.15	22 3 5.9	23 15 5.71	10.302	5 35 30.9	76.19
23	23 18 40.58	10.257	5 8 56.1	76.42	23 3 6.1	23 19 12.37	10.253	5 4 59.2	76.46
24	23 22 46.18	10.209	4 38 19.4	76.66	24 3 6.2	23 23 17.84	10.204	4 34 21.6	76.69
25	23 26 50.63	10.161	4 7 37.3	76.87	25 3 6.3	23 27 22.17	10.156	4 3 38.7	76.89
26	23 30 53.95	10.114	3 36 50.5	77.05	26 3 6.4	23 31 25.36	10.109	3 32 51.2	77.06
27	23 34 56.15	10.068	3 5 59.8	77.20	27 3 6.5	23 35 27.43	10.063	3 2 0.0	77.21
28	23 38 57.25	10.023	2 35 6.1	77.32	28 3 6.6	23 39 28.40	10.018	2 31 5.8	77.32
29	23 42 57.26	9.978	2 4 10.0	77.40	29 3 6.7	23 43 28.28	9.973	2 0 9.4	77.40
30	23 46 56.20	9.934	1 33 12.2	77.45	30 3 6.7	23 47 27.09	9.929	1 29 11.3	77.44
31	23 50 54.09	9.890	1 2 13.3	77.47	31 3 6.7	23 51 24.85	9.884	0 58 12.3	77.46
Feb. 1	23 54 50.93	9.846	0 31 14.3	77.46	1 3 6.7	23 55 21.55	9.840	0 27 13.3	77.45
2	23 58 46.72	9.803	0 0 15.8	77.43	2 3 6.7	23 59 17.20	9.797	0 3 45.0	77.41
3	0 2 41.48	9.760	0 30 41.4	77.36	3 3 6.6	0 3 11.82	9.754	0 34 42.0	77.34
4	0 6 35.21	9.717	1 1 36.6	77.26	4 3 6.6	0 7 5.41	9.711	1 5 36.8	77.24
5	0 10 27.91	9.674	1 32 29.1	77.13	5 3 6.5	0 10 57.97	9.668	1 36 28.9	77.11
6	0 14 19.58	9.632	2 3 18.1	76.98	6 3 6.4	0 14 49.49	9.626	2 7 17.3	76.95
7	0 18 10.23	9.589	2 34 3.0	76.79	7 3 6.3	0 18 39.99	9.583	2 38 1.5	76.76
8	0 21 59.85	9.546	3 4 43.1	76.58	8 3 6.2	0 22 29.46	9.539	3 8 40.7	76.54
9	0 25 48.45	9.503	3 35 17.7	76.33	9 3 6.1	0 26 17.90	9.496	3 39 14.4	76.29
10	0 29 36.01	9.460	4 5 46.1	76.06	10 3 6.0	0 30 5.30	9.453	4 9 41.7	76.01
11	0 33 22.53	9.417	4 36 7.6	75.75	11 3 5.8	0 33 51.66	9.410	4 40 2.1	75.70
12	0 37 8.02	9.374	5 6 21.5	75.42	12 3 5.6	0 37 36.99	9.367	5 10 14.7	75.36
13	0 40 52.47	9.330	5 36 27.1	75.06	13 3 5.4	0 41 21.27	9.323	5 40 18.9	75.00
14	0 44 35.86	9.286	6 6 23.7	74.68	14 3 5.2	0 45 4.49	9.279	6 10 14.0	74.61
15	0 48 18.19	9.241	6 36 10.8	74.27	15 3 4.9	0 48 46.65	9.234	6 39 59.5	74.20
16	0 51 59.44	9.196	7 5 47.7	73.83	16 3 4.7	0 52 27.73	9.188	7 9 34.7	73.76
17	0 55 39.60	9.150	7 35 13.9	73.37	17 3 4.4	0 56 7.71	9.142	7 38 59.1	73.29
18	0 59 18.65	9.104	8 4 23.6	72.88	18 3 4.1	0 59 46.57	9.096	8 8 12.0	72.80
19	1 2 56.58	9.057	8 33 31.2	72.36	19 3 3.8	1 3 24.31	9.049	8 37 12.7	72.28
20	1 6 33.36	9.009	9 2 21.1	71.82	20 3 3.5	1 7 0.89	9.001	9 6 0.5	71.73
21	1 10 8.97	8.960	9 30 57.7	71.25	21 3 3.1	1 10 36.30	8.951	9 34 35.0	71.15
22	1 13 43.39	8.909	9 59 20.3	70.66	22 3 2.7	1 14 10.51	8.899	10 2 55.3	70.55
23	1 17 16.57	8.857	10 27 28.3	70.03	23 3 2.3	1 17 43.48	8.847	10 31 1.0	69.93
24	1 20 48.49	8.804	10 55 21.1	69.38	24 3 1.9	1 21 15.18	8.793	10 58 51.3	69.28
25	1 24 19.09	8.749	11 22 57.9	68.70	25 3 1.4	1 24 45.55	8.738	11 26 25.6	68.60
26	1 27 48.33	8.691	11 50 18.2	68.00	26 3 1.0	1 28 14.55	8.680	11 53 43.2	67.89
27	1 31 16.17	8.630	12 17 21.2	67.27	27 3 0.5	1 31 42.14	8.619	12 20 43.5	67.16
28	1 34 42.53	8.567	12 44 6.4	66.52	28 3 0.0	1 35 8.24	8.555	12 47 25.8	66.40
29	1 38 7.34	8.500	13 10 33.0	65.73	29 2 59.5	1 38 32.77	8.489	13 13 49.5	65.61
30	1 41 30.53	8.431	13 36 40.6	64.92	30 2 59.0	1 41 55.67	8.418	13 39 54.0	64.79
31	1 44 52.04	+8.359	+14 2 28.2	+64.08	31 2 58.4	1 45 16.88	+8.346	+14 5 38.5	+63.95

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	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
Mar. 1	1 38 7.34	+8.500	+13 10 33.0	+65.73	1 2 59.5	1 38 32.77	+8.488	+13 13 49.5	+65.61
2	1 41 30.53	8.431	13 36 40.6	64.92	2 2 59.0	1 41 55.67	8.418	13 39 54.0	64.79
3	1 44 52.04	8.359	14 2 28.2	64.08	3 2 58.4	1 45 16.88	8.346	14 5 38.5	63.95
4	1 48 11.78	8.284	14 27 55.3	63.21	4 2 57.8	1 48 36.31	8.271	14 31 2.4	63.07
5	1 51 29.65	8.205	14 53 1.2	62.31	5 2 57.1	1 51 53.86	8.191	14 56 5.0	62.17
6	1 54 45.57	8.121	15 17 45.2	61.38	6 2 56.4	1 55 9.44	8.106	15 20 45.5	61.24
7	1 57 59.43	8.033	15 42 6.7	60.43	7 2 55.7	1 58 22.94	8.017	15 45 3.5	60.28
8	2 1 11.11	7.940	16 6 5.2	59.45	8 2 54.9	2 1 34.25	7.924	16 8 58.4	59.30
9	2 4 20.50	7.842	16 29 39.8	58.44	9 2 54.1	2 4 43.25	7.825	16 32 29.3	58.29
10	2 7 27.48	7.739	16 52 49.9	57.41	10 2 53.3	2 7 49.82	7.722	16 55 35.6	57.25
11	2 10 31.94	7.631	17 15 34.9	56.34	11 2 52.4	2 10 53.86	7.613	17 18 16.7	56.18
12	2 13 33.74	7.517	17 37 54.0	55.25	12 2 51.5	2 13 55.22	7.498	17 40 31.8	55.08
13	2 16 32.73	7.398	17 59 46.6	54.13	13 2 50.5	2 16 53.75	7.378	18 2 20.3	53.96
14	2 19 28.78	7.272	18 21 12.0	52.99	14 2 49.5	2 19 49.32	7.251	18 23 41.5	52.81
15	2 22 21.73	7.140	18 42 9.6	51.81	15 2 48.4	2 22 41.77	7.118	18 44 34.9	51.63
16	2 25 11.43	7.001	19 2 38.7	50.61	16 2 47.3	2 25 30.95	6.979	19 4 59.7	50.43
17	2 27 57.73	6.856	19 22 38.6	49.38	17 2 46.1	2 28 16.71	6.833	19 24 55.2	49.19
18	2 30 40.45	6.703	19 42 8.6	48.12	18 2 44.9	2 30 58.87	6.679	19 44 20.7	47.93
19	2 33 19.41	6.543	20 1 8.0	46.83	19 2 43.6	2 33 37.25	6.518	20 3 15.5	46.64
20	2 35 54.42	6.375	20 19 35.9	45.51	20 2 42.2	2 36 11.65	6.349	20 21 38.7	45.31
21	2 38 25.31	6.199	20 37 31.7	44.14	21 2 40.8	2 38 41.92	6.172	20 39 29.8	43.94
22	2 40 51.88	6.014	20 54 54.5	42.75	22 2 39.3	2 41 7.85	5.986	20 56 47.8	42.54
23	2 43 13.90	5.819	21 11 43.6	41.32	23 2 37.7	2 43 29.20	5.790	21 13 32.0	41.11
24	2 45 31.14	5.616	21 27 58.0	39.86	24 2 36.0	2 45 45.75	5.586	21 29 41.4	39.65
25	2 47 43.40	5.404	21 43 36.9	38.36	25 2 34.2	2 47 57.29	5.373	21 45 15.3	38.15
26	2 49 50.43	5.181	21 58 39.2	36.82	26 2 32.4	2 50 3.59	5.149	22 0 12.5	36.61
27	2 51 52.00	4.947	22 13 3.9	35.24	27 2 30.5	2 52 4.40	4.914	22 14 32.0	35.02
28	2 53 47.84	4.703	22 26 50.0	33.61	28 2 28.5	2 53 59.46	4.669	22 28 12.9	33.39
29	2 55 37.69	4.448	22 39 56.4	31.92	29 2 26.4	2 55 48.52	4.414	22 41 14.0	31.70
30	2 57 21.27	4.181	22 52 21.6	30.18	30 2 24.2	2 57 31.30	4.147	22 53 33.9	29.95
31	2 58 58.29	3.903	23 4 4.7	28.39	31 2 21.9	2 59 7.50	3.868	23 5 11.6	28.16
Apr. 1	3 0 28.47	3.612	23 15 4.1	26.54	1 2 19.5	3 0 36.85	3.577	23 16 5.6	26.31
2	3 1 51.54	3.309	23 25 18.4	24.62	2 2 16.9	3 1 59.08	3.274	23 26 14.4	24.39
3	3 3 7.21	2.995	23 34 46.0	22.65	3 2 14.2	3 3 13.90	2.959	23 35 36.5	22.42
4	3 4 15.18	2.668	23 43 25.5	20.61	4 2 11.4	3 4 21.02	2.632	23 44 10.4	20.38
5	3 5 15.16	2.330	23 51 15.0	18.50	5 2 8.5	3 5 20.14	2.294	23 51 54.4	18.27
6	3 6 6.89	1.982	23 58 12.7	16.31	6 2 5.4	3 6 11.01	1.947	23 58 46.5	16.08
7	3 6 50.10	1.624	24 4 16.8	14.03	7 2 2.2	3 6 53.37	1.589	24 4 45.1	13.80
8	3 7 24.51	1.253	24 9 25.2	11.67	8 1 58.8	3 7 26.96	1.219	24 9 48.1	11.45
9	3 7 49.90	0.870	24 13 35.9	9.22	9 1 55.2	3 7 51.55	0.838	24 13 53.4	9.00
10	3 8 6.08	0.480	24 16 47.0	6.69	10 1 51.5	3 8 6.95	0.450	24 16 59.3	6.48
11	3 8 12.86	+0.086	24 18 56.3	4.07	11 1 47.7	3 8 13.00	+0.057	24 19 3.5	3.87
12	3 8 10.11	-0.313	24 20 1.5	+ 1.35	12 1 43.7	3 8 9.56	-0.340	24 20 3.8	+ 1.15
13	3 7 57.72	0.716	24 20 0.4	- 1.45	13 1 39.6	3 7 56.53	0.741	24 19 58.0	- 1.64
14	3 7 35.64	1.121	24 18 51.1	4.34	14 1 35.3	3 7 33.86	1.143	24 18 44.2	4.51
15	3 7 3.84	1.525	24 16 31.3	7.31	15 1 30.8	3 7 1.53	1.544	24 16 20.3	7.47
16	3 6 22.37	1.927	24 12 59.2	10.36	16 1 26.2	3 6 19.60	1.943	24 12 44.4	10.50
17	3 5 31.33	2.322	24 8 12.9	13.49	17 1 21.4	3 5 28.17	2.335	24 7 54.7	13.61
18	3 4 30.88	2.711	24 2 10.7	16.68	18 1 16.4	3 4 27.42	2.720	24 1 49.6	16.78
19	3 3 21.25	3.088	23 54 51.4	19.91	19 1 11.3	3 3 17.58	3.093	23 54 27.8	19.99
20	3 2 2.74	3.450	23 46 14.1	23.17	20 1 6.1	3 1 58.95	3.452	23 45 48.6	23.23
21	3 0 35.73	3.795	23 36 18.1	26.46	21 1 0.7	3 0 31.90	3.793	23 35 51.3	26.49
22	2 59 0.65	4.121	23 25 2.8	29.76	22 0 55.2	2 58 56.86	4.115	23 24 35.3	29.76
23	2 57 18.01	4.425	23 12 28.8	33.03	23 0 49.6	2 57 14.35	4.416	23 12 1.3	33.00
24	2 55 28.40	4.703	22 58 37.0	36.25	24 0 43.8	2 55 24.96	4.690	22 58 10.3	36.18
25	2 53 32.48	4.952	22 43 28.9	39.39	25 0 37.9	2 53 29.34	4.936	22 43 3.8	39.30
26	2 51 30.93	5.170	22 27 6.3	42.43	26 0 32.0	2 51 28.17	5.151	22 26 43.5	42.31
27	2 49 24.55	5.355	22 9 32.5	45.33	27 0 26.0	2 49 22.23	5.334	22 9 12.7	45.18
28	2 47 14.16	5.505	21 50 50.8	48.07	28 0 19.9	2 47 12.34	5.482	21 50 34.8	47.89
29	2 45 0.64	5.617	21 31 5.8	50.62	29 0 13.8	2 44 59.35	5.593	21 30 54.1	50.41
30	2 42 44.89	5.691	21 10 22.4	52.93	30 0 7.6	2 42 44.17	5.666	21 10 15.7	52.71
31	2 40 27.83	-5.726	+20 48 46.4	-55.00	31 0 1.4	2 40 27.70	-5.702	+20 48 45.1	-54.76

Date. 1881.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
May 1	h m s 2 40 27.83	s -5.726	20 48 46.4	-55.00	d h m 1 0 1.4	h m s 2 40 27.70	s -5.702	20 48 45.1	-54.76
2	2 38 10.38	5.723	20 26 23.9	56.79	1 23 55.2	2 38 10.85	5.699	20 26 28.5	56.54
3	2 35 53.50	5.679	20 3 21.8	58.30	2 23 49.0	2 35 54.56	5.656	20 3 32.5	58.04
4	2 33 38.14	5.597	19 39 47.7	59.49	3 23 42.8	2 33 39.74	5.575	19 40 4.7	59.22
5	2 31 25.21	5.478	19 15 49.2	60.34	4 23 36.7	2 31 27.34	5.458	19 16 12.6	60.07
6	2 29 15.57	5.323	18 51 34.5	60.86	5 23 30.6	2 29 18.18	5.305	18 52 4.3	60.59
7	2 27 10.05	5.135	18 27 11.7	61.03	6 23 24.6	2 27 13.08	5.120	18 27 47.7	60.78
8	2 25 9.46	4.913	18 2 48.9	60.87	7 23 18.7	2 25 12.84	4.901	18 3 30.6	60.64
9	2 23 14.53	4.664	17 38 34.2	60.35	8 23 12.9	2 23 18.19	4.654	17 39 21.7	60.14
10	2 21 25.93	4.387	17 14 35.5	59.51	9 23 7.1	2 21 29.81	4.383	17 15 28.1	59.32
11	2 19 44.24	4.088	16 51 0.0	58.40	10 23 1.5	2 19 48.22	4.087	16 51 57.1	58.24
12	2 18 9.96	3.769	16 27 54.9	57.02	11 22 56.0	2 18 13.97	3.771	16 28 55.8	56.89
13	2 16 43.56	3.432	16 5 26.5	55.36	12 22 50.6	2 16 47.53	3.438	16 6 30.6	55.26
14	2 15 25.50	3.078	15 43 40.8	53.46	13 22 45.4	2 15 29.32	3.088	15 44 47.4	53.39
15	2 14 16.04	2.714	15 22 43.3	51.35	14 22 40.3	2 14 19.63	2.727	15 23 51.7	51.31
16	2 13 15.37	2.344	15 2 38.8	49.06	15 22 35.3	2 13 18.66	2.359	15 3 48.1	49.05
17	2 12 23.65	1.968	14 43 31.0	46.61	16 22 30.5	2 12 26.57	1.986	14 44 40.6	46.62
18	2 11 41.01	1.589	14 25 23.4	44.04	17 22 25.8	2 11 43.50	1.610	14 26 32.6	44.08
19	2 11 7.49	1.208	14 8 18.6	41.37	18 22 21.3	2 11 9.49	1.231	14 9 26.7	41.44
20	2 10 43.09	0.828	13 52 18.6	38.63	19 22 17.0	2 10 44.53	0.853	13 53 25.0	38.73
21	2 10 27.75	0.452	13 37 25.0	35.84	20 22 12.8	2 10 28.58	0.479	13 38 29.1	35.96
22	2 10 21.40	-0.080	13 23 39.1	33.00	21 22 8.8	2 10 21.57	-0.109	13 24 40.4	33.14
23	2 10 23.91	+0.286	13 11 1.3	30.16	22 22 4.9	2 10 23.38	+0.255	13 11 59.3	30.31
24	2 10 35.12	0.646	12 59 31.6	27.33	23 22 1.2	2 10 33.87	0.614	13 0 25.9	27.50
25	2 10 54.86	0.998	12 49 9.8	24.51	24 21 57.6	2 10 52.85	0.965	12 50 0.0	24.70
26	2 11 22.94	1.341	12 39 55.2	21.73	25 21 54.1	2 11 20.15	1.308	12 40 41.0	21.93
27	2 11 59.15	1.676	12 31 47.0	18.98	26 21 50.7	2 11 55.56	1.643	12 32 28.1	19.19
28	2 12 43.28	2.002	12 24 44.0	16.28	27 21 47.5	2 12 38.89	1.968	12 25 20.2	16.50
29	2 13 35.11	2.318	12 18 44.9	13.66	28 21 44.4	2 13 29.91	2.284	12 19 16.0	13.88
30	2 14 34.41	2.624	12 13 48.2	11.09	29 21 41.5	2 13 28.39	2.590	12 14 14.1	11.32
31	2 15 40.95	2.921	12 9 52.2	8.60	30 21 38.6	2 15 34.11	2.887	12 10 12.7	8.83
June 1	2 16 54.50	3.208	12 6 55.1	6.18	31 21 35.9	2 16 46.83	3.174	12 7 10.2	6.41
2	2 18 14.84	3.487	12 4 55.2	3.83	1 21 33.3	2 18 6.35	3.453	12 5 4.9	4.06
3	2 19 41.77	3.757	12 3 50.4	- 1.57	2 21 30.8	2 19 32.46	3.723	12 3 54.6	- 1.80
4	2 21 15.07	4.018	12 3 39.0	+ 0.60	3 21 28.4	2 21 4.05	3.985	12 3 37.6	+ 0.37
5	2 22 54.53	4.270	12 4 18.6	2.69	4 21 26.1	2 22 43.61	4.237	12 4 11.9	2.47
6	2 24 39.96	4.514	12 5 47.5	4.70	5 21 23.9	2 24 28.24	4.482	12 5 35.4	4.48
7	2 26 31.16	4.752	12 8 3.6	6.63	6 21 21.8	2 26 18.66	4.720	12 7 46.3	6.42
8	2 28 27.95	4.981	12 11 4.8	8.47	7 21 19.8	2 28 14.68	4.950	12 10 42.4	8.26
9	2 30 30.15	5.202	12 14 49.2	10.22	8 21 17.9	2 30 16.12	5.172	12 14 21.8	10.02
10	2 32 37.59	5.417	12 19 14.7	11.89	9 21 16.1	2 32 22.81	5.387	12 18 42.4	11.69
11	2 34 50.10	5.625	12 24 19.3	13.48	10 21 14.4	2 34 34.59	5.595	12 23 42.2	13.29
12	2 37 7.52	5.826	12 30 0.9	14.98	11 21 12.7	2 36 51.29	5.797	12 29 19.3	14.80
13	2 39 29.68	6.020	12 36 17.6	16.41	12 21 11.1	2 39 12.76	5.992	12 35 31.6	16.23
14	2 41 56.44	6.209	12 43 7.5	17.75	13 21 9.6	2 41 38.84	6.181	12 42 17.3	17.58
15	2 44 27.67	6.392	12 50 28.5	19.01	14 21 8.2	2 44 9.40	6.365	12 49 34.3	18.85
16	2 47 3.21	6.570	12 58 18.5	20.19	15 21 6.8	2 46 44.29	6.543	12 57 20.5	20.04
17	2 49 42.93	6.740	13 6 36.5	21.29	16 21 5.5	2 49 33.37	6.714	13 5 34.8	21.15
18	2 52 26.69	6.906	13 15 19.9	22.32	17 21 4.3	2 52 6.51	6.880	13 14 14.7	22.18
19	2 55 14.36	7.066	13 24 27.0	23.27	18 21 3.1	2 54 53.57	7.041	13 23 18.6	23.14
20	2 58 5.82	7.222	13 33 56.3	24.15	19 21 2.0	2 57 44.44	7.198	13 32 44.8	24.03
21	3 1 0.97	7.373	13 43 45.7	24.96	20 21 1.0	3 0 39.01	7.350	13 42 31.4	24.85
22	3 3 59.69	7.520	13 53 53.6	25.70	21 21 0.0	3 3 37.16	7.497	13 52 36.7	25.60
23	3 7 1.86	7.661	14 4 18.6	26.38	22 20 59.1	3 6 38.79	7.639	14 2 59.2	26.28
24	3 10 7.39	7.799	14 14 59.1	26.99	23 20 58.2	3 9 43.79	7.778	14 13 37.5	26.90
25	3 13 16.18	7.933	14 25 53.5	27.54	24 20 57.4	3 12 52.07	7.913	14 24 29.8	27.46
26	3 16 28.15	8.064	14 37 0.3	28.03	25 20 56.7	3 16 3.54	8.044	14 35 34.8	27.96
27	3 19 43.20	8.190	14 48 17.9	28.45	26 20 56.0	3 19 18.11	8.171	14 46 50.7	28.39
28	3 23 1.24	8.314	14 59 45.0	28.81	27 20 55.3	3 22 35.68	8.295	14 58 16.3	28.76
29	3 26 22.21	8.434	15 11 20.0	29.11	28 20 54.7	3 25 56.20	8.416	15 9 50.1	29.07
30	3 29 46.05	8.552	15 23 1.7	29.36	29 20 54.1	3 29 19.60	8.534	15 21 30.8	29.32
31	3 33 12.68	+8.668	+15 34 48.7	+29.55	30 20 53.6	3 32 45.81	8.650	15 33 16.9	29.52
					31 20 53.2	3 36 14.76	+8.764	+15 45 7.3	+29.68

Date. 1881.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
July 1	3 33 12.68	+ 8.668	+15 34 48.7	+29.55	1 20 53.2	3 36 14.76	+8.764	+15 45 7.3	+29.68
2	3 36 42.05	8.781	15 46 39.8	29.70	2 20 52.8	3 39 46.39	8.875	15 57 0.7	29.79
3	3 40 14.09	8.891	15 58 33.7	29.80	3 20 52.4	3 43 20.65	8.984	16 8 56.0	29.84
4	3 43 48.74	9.000	16 10 29.3	29.84	4 20 52.1	3 46 57.49	9.091	16 20 51.8	29.83
5	3 47 25.96	9.107	16 22 25.2	29.82	5 20 51.8	3 50 36.86	9.196	16 32 46.9	29.77
6	3 51 5.70	9.211	16 34 20.2	29.76	6 20 51.6	3 54 18.72	9.298	16 44 40.2	29.67
7	3 54 47.92	9.313	16 46 13.3	29.65	7 20 51.4	3 58 3.03	9.398	16 56 30.6	29.52
8	3 58 32.58	9.413	16 58 3.3	29.50	8 20 51.2	4 1 49.74	9.497	17 8 16.8	29.33
9	4 2 19.64	9.511	17 9 49.0	29.30	9 20 51.1	4 5 38.82	9.594	17 19 57.8	29.10
10	4 6 9.06	9.608	17 21 29.3	29.06	10 20 51.0	4 9 30.22	9.690	17 31 32.5	28.82
11	4 10 0.78	9.703	17 33 3.1	28.77	11 20 51.0	4 13 23.90	9.785	17 42 59.7	28.49
12	4 13 54.77	9.797	17 44 29.3	28.44	12 20 51.0	4 17 19.84	9.878	17 54 18.5	28.11
13	4 17 51.00	9.889	17 55 46.9	28.06	13 20 51.1	4 21 17.98	9.969	18 5 27.8	27.70
14	4 21 49.42	9.980	18 6 54.9	27.64	14 20 51.1	4 25 18.28	10.058	18 16 26.6	27.25
15	4 25 49.99	10.069	18 17 52.2	27.18	15 20 51.2	4 29 20.70	10.146	18 27 13.9	26.75
16	4 29 52.67	10.156	18 28 37.9	26.67	16 20 51.3	4 33 25.21	10.232	18 37 48.7	26.20
17	4 33 57.42	10.241	18 39 10.9	26.12	17 20 51.5	4 37 31.76	10.316	18 48 9.9	25.62
18	4 38 4.20	10.325	18 49 30.2	25.53	18 20 51.7	4 41 40.30	10.397	18 58 16.8	24.99
19	4 42 12.96	10.406	18 59 35.0	24.90	19 20 51.9	4 45 50.79	10.477	19 8 8.4	24.34
20	4 46 23.66	10.486	19 9 24.4	24.24	20 20 52.2	4 50 3.17	10.556	19 17 43.6	23.64
21	4 50 36.24	10.564	19 18 57.3	23.54	21 20 52.5	4 54 17.40	10.633	19 27 1.8	22.90
22	4 54 50.66	10.640	19 28 13.0	22.80	22 20 52.8	4 58 33.46	10.708	19 36 1.9	22.13
23	4 59 6.89	10.714	19 37 10.6	22.02	23 20 53.1	5 2 51.29	10.780	19 44 43.3	21.33
24	5 3 24.88	10.786	19 45 49.3	21.22	24 20 53.5	5 7 10.83	10.850	19 53 5.0	20.50
25	5 7 44.57	10.856	19 54 8.3	20.38	25 20 53.9	5 11 32.05	10.920	20 1 6.4	19.63
26	5 12 5.92	10.925	20 2 6.8	19.51	26 20 54.4	5 15 54.90	10.987	20 8 46.5	18.73
27	5 16 28.90	10.992	20 9 44.0	18.61	27 20 54.9	5 20 19.34	11.052	20 16 4.7	17.81
28	5 20 53.45	11.056	20 16 59.2	17.68	28 20 55.4	5 24 45.31	11.115	20 23 0.4	16.85
29	5 25 19.53	11.118	20 23 51.8	16.72	29 20 55.9	5 29 12.79	11.176	20 29 32.7	15.86
30	5 29 47.11	11.180	20 30 20.9	15.73	30 20 56.5	5 33 41.73	11.236	20 35 40.9	14.85
31	5 34 16.13	11.239	20 36 25.9	14.71	31 20 57.0	5 38 12.07	11.294	20 41 24.5	13.81
Aug. 1	5 38 46.54	11.297	20 42 6.2	13.67	1 20 57.6	5 42 43.79	11.351	20 46 42.8	12.74
2	5 43 18.32	11.353	20 47 21.1	12.60	2 20 58.2	5 47 16.84	11.405	20 51 35.2	11.64
3	5 47 51.42	11.407	20 52 10.1	11.50	3 20 58.8	5 51 51.17	11.458	20 56 1.1	10.53
4	5 52 25.79	11.459	20 56 32.5	10.38	4 20 59.4	5 56 26.75	11.509	21 0 0.0	9.39
5	5 57 1.39	11.510	21 0 27.8	9.24	5 21 0.1	6 1 3.53	11.558	21 3 31.2	8.23
6	6 6 1 38.19	11.558	21 3 55.4	8.08	6 21 0.7	6 5 41.46	11.605	21 6 34.2	7.04
7	6 6 16.13	11.605	21 6 54.8	6.89	7 21 1.4	6 10 20.50	11.650	21 9 8.5	5.83
8	6 10 55.17	11.650	21 9 25.4	5.68	8 21 2.1	6 15 0.61	11.694	21 11 13.5	4.61
9	6 15 35.27	11.693	21 11 26.7	4.45	9 21 2.8	6 19 41.74	11.736	21 12 49.0	3.36
10	6 20 16.38	11.735	21 12 58.4	3.20	10 21 3.5	6 24 23.83	11.776	21 13 54.3	2.10
11	6 24 58.44	11.774	21 14 0.0	1.94	11 21 4.3	6 29 6.88	11.814	21 14 29.2	+ 0.82
12	6 29 41.45	11.811	21 14 31.1	+ 0.66	12 21 5.1	6 33 50.81	11.849	21 14 33.2	- 0.47
13	6 34 25.32	11.846	21 14 31.3	- 0.63	13 21 5.9	6 38 35.55	11.882	21 14 5.9	1.78
14	6 39 10.00	11.879	21 14 0.2	1.94	14 21 6.7	6 43 21.07	11.913	21 13 7.1	3.10
15	6 43 55.44	11.910	21 12 57.6	3.26	15 21 7.6	6 48 7.30	11.942	21 11 36.3	4.44
16	6 48 41.59	11.938	21 11 23.1	4.60	16 21 8.4	6 52 54.20	11.968	21 9 33.5	5.79
17	6 53 28.39	11.964	21 9 16.5	5.94	17 21 9.3	6 57 41.71	11.993	21 6 58.3	7.14
18	6 58 15.80	11.988	21 6 37.6	7.29	18 21 10.2	7 2 29.97	12.015	21 3 50.7	8.50
19	7 3 3.75	12.010	21 3 26.2	8.65	19 21 11.1	7 7 18.34	12.034	21 0 10.2	9.87
20	7 7 52.20	12.029	20 59 42.0	10.02	20 21 12.0	7 12 7.36	12.051	20 55 56.0	11.24
21	7 12 41.09	12.046	20 55 25.0	11.39	21 21 12.8	7 16 56.76	12.067	20 51 10.5	12.62
22	7 17 30.36	12.061	20 50 34.9	12.77	22 21 13.7	7 21 46.50	12.080	20 45 51.0	14.00
23	7 22 19.96	12.074	20 45 11.8	14.15	23 21 14.6	7 26 36.51	12.090	20 39 58.4	15.38
24	7 27 9.83	12.084	20 39 15.6	15.53	24 21 15.5	7 31 26.77	12.099	20 33 32.7	16.76
25	7 31 59.94	12.093	20 32 46.3	16.91	25 21 16.4	7 36 17.22	12.106	20 26 33.8	18.15
26	7 36 50.23	12.099	20 25 43.9	18.29	26 21 17.3	7 41 7.81	12.111	20 19 1.8	19.53
27	7 41 40.65	12.104	20 18 8.4	19.67	27 21 18.2	7 45 58.49	12.115	20 10 56.5	20.91
28	7 46 31.16	12.107	20 9 59.7	21.05	28 21 19.1	7 50 49.23	12.116	20 2 18.2	22.28
29	7 51 21.72	12.108	20 1 18.0	22.42	29 21 20.0	7 55 39.97	12.115	19 53 6.9	23.66
30	7 56 12.27	12.107	19 52 3.4	23.79	30 21 20.9	8 0 30.67	12.112	19 43 22.7	25.03
31	8 1 2.78	+12.104	+19 42 16.0	-25.16	31 21 21.8	8 5 21.30	+12.108	+19 33 5.8	-26.39

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	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
Sept. 1	h m s	s	° ' "	"	d h m	h m s	s	° ' "	"
2	8 5 53.21	+12.100	+19 31' 55.9	-26.52	1 21 22.7	8 10 11.81	+12.102	+19 22' 16.3	-27.75
3	8 10 43.52	12.094	19 21 3.3	27.88	2 21 23.6	8 15 2.17	12.095	19 10 54.4	29.09
4	8 15 33.68	12.087	19 9 38.3	29.22	3 21 24.5	8 19 52.34	12.086	18 59 0.2	30.44
5	8 20 23.65	12.078	18 57 41.1	30.56	4 21 25.4	8 24 42.30	12.077	18 46 34.0	31.76
6	8 25 13.41	12.069	18 45 11.9	31.88	5 21 26.3	8 29 32.01	12.067	18 33 36.0	33.08
7	8 30 2.92	12.058	18 32 11.0	33.20	6 21 27.2	8 34 21.46	12.055	18 20 6.5	34.39
8	8 34 52.16	12.046	18 18 38.6	34.51	7 21 28.1	8 39 10.61	12.042	18 6 5.7	35.69
9	8 39 41.10	12.033	18 4 35.0	35.80	8 21 28.9	8 43 59.43	12.028	17 51 34.1	36.97
10	8 44 29.71	12.019	17 50 0.7	37.08	9 21 29.8	8 48 47.91	12.013	17 36 31.8	38.23
11	8 49 17.98	12.004	17 34 55.8	38.34	10 21 30.6	8 53 36.01	11.997	17 20 59.4	39.49
12	8 54 5.87	11.988	17 19 20.8	39.59	11 21 31.5	8 58 23.72	11.980	17 24 56.9	40.73
13	8 58 53.37	11.971	17 3 15.8	40.83	12 21 32.3	9 3 11.01	11.962	16 48 24.9	41.95
14	9 3 40.44	11.953	16 46 41.4	42.05	13 21 33.2	9 7 57.85	11.943	16 31 23.8	43.15
15	9 8 27.07	11.934	16 29 38.0	43.25	14 21 34.0	9 12 44.24	11.924	16 13 54.1	44.34
16	9 13 13.25	11.915	16 12 6.0	44.43	15 21 34.8	9 17 30.16	11.904	15 55 56.2	45.50
17	9 17 58.96	11.895	15 54 5.9	45.59	16 21 35.6	9 22 15.62	11.884	15 37 30.6	46.65
18	9 22 44.20	11.875	15 35 38.1	46.73	17 21 36.4	9 27 0.59	11.863	15 18 37.6	47.77
19	9 27 28.96	11.854	15 16 43.1	47.85	18 21 37.2	9 31 45.04	11.841	14 59 18.1	48.87
20	9 32 13.20	11.833	14 57 21.6	48.95	19 21 38.0	9 36 28.97	11.819	14 39 32.5	49.95
21	9 36 56.92	11.811	14 37 34.1	50.03	20 21 38.8	9 41 12.36	11.797	14 19 21.1	51.02
22	9 41 40.11	11.789	14 17 20.9	51.09	21 21 39.6	9 45 55.21	11.774	13 58 44.6	52.05
23	9 46 22.76	11.766	13 56 42.6	52.12	22 21 40.3	9 50 37.51	11.751	13 37 43.5	53.06
24	9 51 4.86	11.743	13 35 39.8	53.13	23 21 41.1	9 55 19.26	11.728	13 16 18.3	54.05
25	9 55 46.41	11.720	13 14 13.0	54.12	24 21 41.8	10 0 0.47	11.705	12 54 29.8	55.02
26	10 0 27.42	11.697	12 52 22.9	55.08	25 21 42.6	10 4 41.14	11.683	12 32 18.4	55.96
27	10 5 7.89	11.675	12 30 10.0	56.02	26 21 43.3	10 9 21.26	11.660	12 9 44.7	56.88
28	10 9 47.82	11.652	12 7 34.9	56.93	27 21 44.0	10 14 0.84	11.637	11 46 49.4	57.77
29	10 14 27.21	11.630	11 44 38.3	57.82	28 21 44.7	10 18 39.90	11.615	11 23 32.9	58.63
30	10 19 6.08	11.608	11 21 20.6	58.68	29 21 45.4	10 23 18.44	11.594	10 59 56.0	59.47
Oct. 1	10 23 44.44	11.587	10 57 42.5	59.52	30 21 46.1	10 27 56.47	11.574	10 35 59.1	60.29
2	10 28 22.29	11.567	10 33 44.5	60.33	1 21 46.8	10 32 34.01	11.554	10 11 42.9	61.08
3	10 32 59.66	11.547	10 9 27.2	61.12	2 21 47.4	10 37 11.09	11.535	9 47 8.1	61.84
4	10 37 36.56	11.528	9 44 51.4	61.88	3 21 48.1	10 41 47.70	11.516	9 22 15.4	62.58
5	10 42 13.01	11.509	9 19 57.7	62.62	4 21 48.7	10 46 23.87	11.499	8 57 5.2	63.30
6	10 46 49.02	11.492	8 54 46.6	63.33	5 21 49.4	10 50 59.63	11.482	8 31 38.1	63.99
7	10 51 24.62	11.475	8 29 18.7	64.02	6 21 50.0	10 55 35.00	11.466	8 5 54.7	64.64
8	10 55 59.83	11.460	8 3 34.7	64.67	7 21 50.7	11 0 10.00	11.451	7 39 56.0	65.27
9	11 0 34.67	11.445	7 37 35.3	65.30	8 21 51.3	11 4 44.65	11.437	7 13 42.4	65.88
10	11 5 9.17	11.431	7 11 21.1	65.90	9 21 51.9	11 9 18.99	11.424	6 47 14.7	66.46
11	11 9 43.36	11.418	6 44 52.8	66.48	10 21 52.5	11 13 53.02	11.412	6 20 33.5	67.01
12	11 14 17.25	11.406	6 18 11.1	67.03	11 21 53.2	11 18 26.78	11.401	5 53 39.3	67.53
13	11 18 50.87	11.395	5 51 16.5	67.55	12 21 53.8	11 23 0.30	11.391	5 26 33.1	68.03
14	11 23 24.25	11.385	5 24 9.9	68.04	13 21 54.4	11 27 33.60	11.382	4 59 15.2	68.49
15	11 27 57.41	11.377	4 56 51.8	68.50	14 21 55.0	11 32 6.70	11.375	4 31 46.6	68.93
16	11 32 30.38	11.370	4 29 23.0	68.93	15 21 55.6	11 36 39.64	11.369	4 4 7.9	69.33
17	11 37 3.19	11.364	4 1 44.2	69.33	16 21 56.2	11 41 12.44	11.364	3 36 20.0	69.71
18	11 41 35.87	11.359	3 33 56.2	69.71	17 21 56.8	11 45 45.14	11.360	3 8 23.3	70.05
19	11 46 8.45	11.355	3 5 59.5	70.05	18 21 57.4	11 50 17.76	11.357	2 40 18.7	70.36
20	11 50 40.95	11.352	2 37 55.0	70.36	19 21 58.0	11 54 50.34	11.356	2 12 7.1	70.65
21	11 55 13.41	11.351	2 9 43.5	70.64	20 21 58.6	11 59 22.89	11.356	1 43 48.9	70.91
22	11 59 45.85	11.351	1 41 25.5	70.90	21 21 59.2	12 3 55.45	11.357	1 15 24.9	71.13
23	12 4 18.30	11.352	1 13 1.7	71.12	22 21 59.8	12 8 28.05	11.359	0 46 53.9	71.33
24	12 8 50.79	11.354	0 44 33.0	71.31	23 22 0.4	12 13 0.72	11.362	0 18 22.5	71.49
25	12 13 23.35	11.358	0 16 0.0	71.47	24 22 1.0	12 17 33.50	11.367	0 10 14.4	71.62
26	12 17 56.03	11.363	0 12 36.4	71.60	25 22 1.6	12 22 6.42	11.374	0 38 54.2	71.73
27	12 22 28.85	11.370	0 41 15.7	71.70	26 22 2.2	12 26 39.51	11.382	1 7 36.0	71.79
28	12 27 1.84	11.378	1 9 56.9	71.76	27 22 2.8	12 31 12.80	11.391	1 36 19.1	71.83
29	12 31 35.03	11.387	1 38 39.3	71.80	28 22 3.4	12 35 46.33	11.402	2 5 3.0	71.84
30	12 36 8.47	11.398	2 7 22.4	71.81	29 22 4.0	12 40 20.14	11.414	2 33 46.8	71.82
31	12 40 42.19	11.410	2 36 5.4	71.79	30 22 4.7	12 44 54.27	11.428	3 2 29.7	71.78
32	12 45 16.23	11.424	3 4 47.5	71.74	31 22 5.3	12 49 28.75	11.444	3 31 11.1	71.70
33	12 49 50.62	+11.440	-3 33 28.0	-71.66	32 22 5.9	12 54 3.62	+11.461	-3 59 50.1	-71.59

Date. 1881.	FOR WASHINGTON MEAN NOON.					FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.	
Nov. 1	12 49 50.62	+11.440	3 33 28.0	-71.66	1 22 5.9	12 54 3.62	+11.461	3 59 50.1	-71.59	
2	12 54 25.40	11.457	4 2 6.1	71.54	2 22 6.5	12 58 38.93	11.480	4 28 26.1	71.45	
3	12 59 0.62	11.476	4 30 41.1	71.40	3 22 7.2	13 3 14.69	11.500	4 56 58.4	71.28	
4	13 3 36.30	11.496	4 59 12.3	71.23	4 22 7.8	13 7 50.96	11.522	5 25 26.1	71.07	
5	13 8 12.48	11.518	5 27 38.8	71.02	5 22 8.5	13 12 27.78	11.545	5 53 48.5	70.84	
6	13 12 49.21	11.541	5 56 0.0	70.78	6 22 9.2	13 17 5.17	11.570	6 22 5.0	70.57	
7	13 17 26.51	11.566	6 24 15.1	70.51	7 22 9.9	13 21 43.17	11.597	6 50 14.7	70.27	
8	13 22 4.43	11.593	6 52 23.4	70.21	8 22 10.6	13 26 21.84	11.625	7 18 16.8	69.94	
9	13 26 43.01	11.621	7 20 24.1	69.88	9 22 11.3	13 31 1.19	11.654	7 46 10.7	69.57	
10	13 31 22.28	11.650	7 48 16.5	69.51	10 22 12.0	13 35 41.25	11.685	8 13 55.4	69.18	
11	13 36 2.26	11.681	8 15 59.7	69.11	11 22 12.8	13 40 22.07	11.717	8 41 30.1	68.75	
12	13 40 43.00	11.713	8 43 32.8	68.68	12 22 13.5	13 45 3.68	11.751	9 8 54.1	68.28	
13	13 45 24.53	11.747	9 10 55.1	68.21	13 22 14.3	13 49 46.13	11.786	9 36 6.6	67.79	
14	13 50 6.89	11.782	9 38 5.9	67.71	14 22 15.1	13 54 29.42	11.822	10 3 6.9	67.26	
15	13 54 50.09	11.815	10 5 4.4	67.18	15 22 15.9	13 59 13.61	11.859	10 29 54.1	66.70	
16	13 59 34.18	11.855	10 31 49.7	66.62	16 22 16.7	14 3 58.69	11.897	10 56 27.4	66.10	
17	14 4 19.17	11.893	10 58 21.1	66.02	17 22 17.5	14 8 44.72	11.937	11 22 46.1	65.48	
18	14 9 5.10	11.933	11 24 37.8	65.39	18 22 18.3	14 13 31.70	11.977	11 48 49.2	64.81	
19	14 13 51.98	11.973	11 50 38.8	64.72	19 22 19.2	14 18 19.66	12.019	12 14 35.9	64.11	
20	14 18 39.84	12.015	12 16 23.4	64.02	20 22 20.1	14 23 8.63	12.062	12 40 5.6	63.38	
21	14 23 28.71	12.057	12 41 50.9	63.29	21 22 21.0	14 27 58.64	12.106	13 5 17.3	62.61	
22	14 28 18.61	12.101	13 7 0.4	62.52	22 22 21.9	14 32 49.70	12.150	13 30 10.2	61.82	
23	14 33 9.56	12.145	13 31 51.1	61.72	23 22 22.8	14 37 41.83	12.195	13 54 43.5	60.99	
24	14 38 1.59	12.190	13 56 22.1	60.89	24 22 23.7	14 42 35.05	12.240	14 18 56.4	60.12	
25	14 42 54.68	12.235	14 20 32.7	60.02	25 22 24.7	14 47 29.37	12.286	14 42 48.1	59.22	
26	14 47 48.88	12.281	14 44 22.0	59.11	26 22 25.7	14 52 24.82	12.333	15 6 17.8	58.28	
27	14 52 44.20	12.328	15 7 49.3	58.18	27 22 26.7	14 57 21.41	12.382	15 29 24.8	57.32	
28	14 57 40.66	12.376	15 30 53.8	57.22	28 22 27.7	15 2 19.15	12.430	15 52 8.2	56.32	
29	15 2 38.26	12.424	15 53 34.7	56.22	29 22 28.8	15 7 18.05	12.479	16 14 27.2	55.29	
30	15 7 37.02	12.473	16 15 51.2	55.19	30 22 29.9	15 12 18.13	12.528	16 36 21.2	54.23	
Dec. 1	15 12 36.95	12.522	16 37 42.6	54.12	1 22 30.9	15 17 19.39	12.578	16 57 49.1	53.13	
2	15 17 38.06	12.571	16 59 7.9	53.02	2 22 32.0	15 22 21.85	12.627	17 18 50.3	52.00	
3	15 22 40.36	12.620	17 20 6.5	51.89	3 22 33.1	15 27 25.50	12.677	17 39 24.1	50.83	
4	15 27 43.85	12.670	17 40 37.6	50.72	4 22 34.2	15 32 30.34	12.727	17 59 29.6	49.64	
5	15 32 48.52	12.720	18 0 40.4	49.53	5 22 35.4	15 37 36.39	12.777	18 19 6.1	48.41	
6	15 37 54.40	12.770	18 20 14.2	48.30	6 22 36.5	15 42 43.65	12.828	18 38 12.8	47.16	
7	15 43 1.48	12.820	18 39 18.2	47.05	7 22 37.7	15 47 52.11	12.878	18 56 48.9	45.88	
8	15 48 9.75	12.870	18 57 51.7	45.77	8 22 38.9	15 53 1.76	12.928	19 14 53.8	44.56	
9	15 53 19.21	12.919	19 15 53.9	44.45	9 22 40.1	15 58 12.59	12.977	19 32 26.8	43.21	
10	15 58 29.84	12.968	19 33 24.2	43.10	10 22 41.3	16 3 24.60	13.025	19 49 27.0	41.83	
11	16 3 41.64	13.016	19 50 21.7	41.72	11 22 42.6	16 8 37.75	13.072	20 5 53.8	40.42	
12	16 8 54.58	13.063	20 6 45.8	40.31	12 22 43.9	16 13 52.03	13.119	20 21 46.5	38.99	
13	16 14 8.64	13.110	20 22 35.7	38.88	13 22 45.2	16 19 7.44	13.165	20 37 4.5	37.52	
14	16 19 23.82	13.156	20 37 50.9	37.41	14 22 46.5	16 24 23.94	13.210	20 51 46.9	36.03	
15	16 24 40.08	13.200	20 52 30.6	35.92	15 22 47.9	16 29 41.49	13.253	21 5 53.2	34.51	
16	16 29 57.39	13.243	21 6 34.3	34.40	16 22 49.3	16 35 0.08	13.296	21 19 22.8	32.96	
17	16 35 15.73	13.285	21 20 1.3	32.86	17 22 50.7	16 40 19.66	13.337	21 32 15.0	31.39	
18	16 40 35.05	13.326	21 32 51.0	31.29	18 22 52.1	16 45 40.20	13.376	21 44 29.2	29.80	
19	16 45 55.32	13.365	21 45 2.7	29.70	19 22 53.5	16 51 1.65	13.414	21 56 4.9	28.19	
20	16 51 16.50	13.402	21 56 36.0	28.09	20 22 54.9	16 56 23.98	13.450	22 7 1.7	26.56	
21	16 56 38.55	13.438	22 7 30.4	26.46	21 22 56.4	17 1 47.16	13.483	22 17 19.0	24.91	
22	17 2 1.44	13.471	22 17 45.3	24.81	22 22 57.8	17 7 11.12	13.514	22 26 56.2	23.23	
23	17 7 25.11	13.503	22 27 20.2	23.13	23 22 59.3	17 12 35.82	13.545	22 35 53.0	21.53	
24	17 12 49.51	13.533	22 36 14.7	21.43	24 23 0.8	17 18 1.20	13.573	22 44 8.9	19.81	
25	17 18 14.58	13.560	22 44 28.4	19.72	25 23 2.3	17 23 27.22	13.598	22 51 43.5	18.08	
26	17 23 40.29	13.585	22 52 0.8	17.99	26 23 3.8	17 28 53.83	13.622	22 58 36.5	16.33	
27	17 29 6.58	13.608	22 58 51.7	16.25	27 23 5.3	17 34 20.97	13.643	23 4 47.4	14.56	
28	17 34 33.39	13.629	23 5 0.6	14.50	28 23 6.8	17 39 48.58	13.661	23 10 16.0	12.81	
29	17 40 0.67	13.647	23 10 27.3	12.73	29 23 8.3	17 45 16.61	13.677	23 15 2.0	11.02	
30	17 45 28.38	13.663	23 15 11.4	9.95	30 23 9.8	17 50 45.01	13.691	23 19 5.0	9.23	
31	17 50 56.44	13.677	23 19 12.7	9.16	31 23 11.4	17 56 13.71	13.703	23 22 25.0	7.43	
32	17 56 24.80	+13.689	-23 22 31.0	-7.37	32 23 12.9	18 1 42.65	+13.712	-23 25 1.8	-5.63	

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Jan. 1	17 19 19.83	+7.937	-23 29 54.8	- 9.30	1 22 32.7	17 22 18.94	+7.947	-23 33 18.2	- 8.74
2	17 22 30.51	7.952	23 33 30.9	8.71	2 22 31.9	17 25 29.83	7.961	23 36 41.0	8.15
3	17 25 41.53	7.966	23 36 52.9	8.12	3 22 31.2	17 28 41.06	7.974	23 39 49.5	7.56
4	17 28 52.88	7.979	23 40 0.7	7.53	4 22 30.4	17 31 52.61	7.988	23 42 43.8	6.96
5	17 32 4.55	7.993	23 42 54.2	6.93	5 22 29.7	17 35 4.48	8.001	23 45 23.8	6.36
6	17 35 16.53	8.005	23 45 33.3	6.33	6 22 28.9	17 38 16.64	8.013	23 47 49.2	5.75
7	17 38 28.81	8.017	23 47 58.0	5.72	7 22 28.2	17 41 29.08	8.024	23 50 0.2	5.14
8	17 41 41.36	8.029	23 50 8.0	5.11	8 22 27.5	17 44 41.79	8.035	23 51 56.5	4.53
9	17 44 54.18	8.040	23 52 3.4	4.50	9 22 26.7	17 47 54.75	8.046	23 53 38.1	3.92
10	17 48 7.27	8.050	23 53 44.1	3.89	10 22 26.0	17 51 7.97	8.056	23 55 5.1	3.31
11	17 51 20.59	8.060	23 55 10.2	3.27	11 22 25.3	17 54 21.42	8.065	23 56 17.3	2.70
12	17 54 34.16	8.069	23 56 21.5	2.66	12 22 24.6	17 57 35.10	8.074	23 57 14.8	2.08
13	17 57 47.95	8.078	23 57 18.0	2.04	13 22 23.9	18 0 48.99	8.083	23 57 57.3	1.46
14	18 1 1.95	8.087	23 57 59.6	1.42	14 22 23.2	18 4 3.08	8.091	23 58 25.0	0.83
15	18 4 16.15	8.096	23 58 26.3	0.79	15 22 22.5	18 7 17.36	8.099	23 58 37.5	- 0.21
16	18 7 30.54	8.103	23 58 37.8	- 0.17	16 22 21.8	18 10 31.83	8.106	23 58 35.1	+ 0.42
17	18 10 45.11	8.110	23 58 34.4	+ 0.46	17 22 21.1	18 13 46.47	8.113	23 58 17.6	1.05
18	18 13 59.85	8.117	23 58 15.8	1.09	18 22 20.4	18 17 1.26	8.119	23 57 45.0	1.68
19	18 17 14.75	8.123	23 57 42.1	1.73	19 22 19.7	18 20 16.19	8.125	23 56 57.1	2.31
20	18 20 29.78	8.129	23 56 53.2	2.35	20 22 19.0	18 23 31.25	8.130	23 55 54.2	2.94
21	18 23 44.04	8.134	23 55 49.2	2.99	21 22 18.3	18 26 46.43	8.134	23 54 36.1	3.57
22	18 27 0.23	8.139	23 54 30.0	3.62	22 22 17.6	18 30 1.71	8.138	23 53 12.8	4.20
23	18 30 15.61	8.143	23 52 55.6	4.25	23 22 16.9	18 33 17.08	8.142	23 51 24.4	4.83
24	18 33 31.08	8.146	23 51 6.0	4.88	24 22 16.3	18 36 32.52	8.144	23 49 10.7	5.47
25	18 36 46.61	8.148	23 49 1.2	5.52	25 22 15.6	18 39 48.01	8.146	23 46 51.9	6.10
26	18 40 2.19	8.150	23 46 41.2	6.15	26 22 14.9	18 43 3.54	8.147	23 44 17.9	6.73
27	18 43 17.82	8.151	23 44 6.1	6.78	27 22 14.2	18 46 19.09	8.148	23 41 28.7	7.36
28	18 46 33.46	8.152	23 41 15.7	7.41	28 22 13.5	18 49 34.65	8.148	23 38 24.4	8.00
29	18 49 49.11	8.152	23 38 10.2	8.05	29 22 12.9	18 52 50.20	8.147	23 35 4.9	8.63
30	18 53 4.75	8.151	23 34 49.4	8.68	30 22 12.2	18 56 5.73	8.146	23 31 30.3	9.26
31	18 56 20.38	8.150	23 31 13.6	9.31	31 22 11.5	18 59 21.22	8.144	23 27 40.7	9.88
Feb. 1	18 59 35.96	8.148	23 27 22.8	9.93	1 22 10.8	19 2 36.66	8.142	23 23 36.0	10.51
2	19 2 51.48	8.145	23 23 16.8	10.56	2 22 10.1	19 5 52.02	8.139	23 19 16.3	11.13
3	19 6 6.93	8.142	23 18 55.8	11.18	3 22 9.4	19 9 7.30	8.135	23 14 41.6	11.75
4	19 9 22.30	8.138	23 14 19.9	11.81	4 22 8.7	19 12 22.49	8.130	23 9 52.1	12.37
5	19 12 37.57	8.134	23 9 29.1	12.43	5 22 8.0	19 15 37.57	8.126	23 4 47.8	12.99
6	19 15 52.74	8.129	23 4 23.5	13.05	6 22 7.4	19 18 52.54	8.121	22 59 28.6	13.61
7	19 19 7.80	8.124	22 59 3.0	13.66	7 22 6.7	19 22 7.38	8.115	22 53 54.6	14.22
8	19 22 22.72	8.119	22 53 27.7	14.28	8 22 6.0	19 25 22.08	8.109	22 48 6.0	14.83
9	19 25 37.50	8.113	22 47 37.7	14.89	9 22 5.3	19 28 36.63	8.102	22 42 2.7	15.44
10	19 28 52.14	8.106	22 41 33.1	15.50	10 22 4.6	19 31 51.02	8.096	22 35 44.9	16.04
11	19 32 6.61	8.099	22 35 14.0	16.10	11 22 3.9	19 35 5.25	8.089	22 29 12.6	16.64
12	19 35 20.91	8.092	22 28 40.3	16.71	12 22 3.2	19 38 19.30	8.081	22 22 25.9	17.24
13	19 38 35.04	8.084	22 21 52.2	17.30	13 22 2.5	19 41 33.16	8.073	22 15 24.8	17.84
14	19 41 48.98	8.076	22 14 49.7	17.90	14 22 1.7	19 44 46.82	8.064	22 8 9.4	18.43
15	19 45 2.73	8.068	22 7 32.9	18.49	15 22 1.0	19 48 0.28	8.056	22 0 39.8	19.02
16	19 48 16.26	8.060	22 0 2.0	19.09	16 22 0.3	19 51 13.53	8.047	21 52 56.1	19.61
17	19 51 29.58	8.051	21 52 16.9	19.67	17 21 59.6	19 54 26.55	8.038	21 44 58.3	20.19
18	19 54 42.68	8.041	21 44 17.7	20.25	18 21 58.9	19 57 39.33	8.028	21 36 46.7	20.77
19	19 57 55.55	8.031	21 36 4.7	20.83	19 21 58.1	20 0 51.88	8.017	21 28 21.3	21.34
20	20 1 8.18	8.021	21 27 37.9	21.40	20 21 57.4	20 4 4.18	8.007	21 19 42.2	21.91
21	20 4 20.55	8.010	21 18 57.3	21.97	21 21 56.6	20 7 16.22	7.996	21 10 49.5	22.47
22	20 7 32.66	7.999	21 10 3.2	22.53	22 21 55.9	20 10 27.98	7.984	21 1 43.3	23.03
23	20 10 44.50	7.987	21 0 55.6	23.09	23 21 55.1	20 13 39.46	7.972	20 52 23.9	23.58
24	20 13 56.06	7.975	20 51 34.8	23.64	24 21 54.4	20 16 50.66	7.960	20 42 51.3	24.13
25	20 17 7.33	7.963	20 42 0.7	24.19	25 21 53.6	20 20 1.56	7.947	20 33 5.6	24.67
26	20 20 18.31	7.950	20 32 13.6	24.73	26 21 52.9	20 23 12.15	7.935	20 23 7.0	25.21
27	20 23 28.97	7.937	20 22 13.5	25.27	27 21 52.1	20 26 22.43	7.921	20 12 55.5	25.74
28	20 26 39.32	7.924	20 12 0.6	25.79	28 21 51.3	20 29 32.37	7.907	20 2 31.5	26.27
29	20 29 49.33	7.910	20 1 35.0	26.33	29 21 50.6	20 32 41.98	7.893	19 51 54.9	26.79
30	20 32 59.01	7.896	19 50 57.0	26.84	30 21 49.8	20 35 51.25	7.879	19 41 5.9	27.30
31	20 36 8.35	+7.882	-19 40 6.6	+27.35	31 21 49.0	20 39 0.17	+7.864	-19 30 4.8	+27.80

Date. 1881.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
Mar. 1	h m s	s	° ' "		d h m	h m s	s	° ' "	
1	20 29 49.33	+7.910	-20 1 35.0	+26.33	1 21 50.6	20 32 41.98	+7.893	-19 51 54.9	+46.79
2	20 32 59.01	7.896	19 50 57.0	26.84	2 21 49.8	20 35 51.25	7.879	19 41 5.9	27.30
3	20 36 8.35	7.882	19 40 6.6	27.35	3 21 49.0	20 39 0.17	7.864	19 30 4.8	27.80
4	20 39 17.35	7.867	19 29 4.0	27.86	4 21 48.2	20 42 8.74	7.849	19 18 51.6	28.30
5	20 42 25.99	7.852	19 17 49.4	28.36	5 21 47.4	20 45 16.95	7.834	19 7 26.5	28.79
6	20 45 34.28	7.837	19 6 22.8	28.85	6 21 46.6	20 48 24.80	7.819	18 55 49.7	29.28
7	20 48 42.20	7.822	18 54 44.5	29.34	7 21 45.8	20 51 32.29	7.805	18 44 1.3	29.76
8	20 51 49.75	7.808	18 42 54.6	29.82	8 21 44.9	20 54 39.41	7.789	18 32 1.4	30.23
9	20 54 56.95	7.792	18 30 53.2	30.29	9 21 44.1	20 57 46.16	7.774	18 19 50.2	30.69
10	20 58 3.78	7.777	18 18 40.5	30.76	10 21 43.3	21 0 52.54	7.758	18 7 27.8	31.16
11	21 1 10.24	7.761	18 6 16.7	31.22	11 21 42.4	21 3 58.56	7.743	17 54 54.3	31.62
12	21 4 16.33	7.746	17 53 41.7	31.68	12 21 41.6	21 7 4.21	7.727	17 42 10.0	32.07
13	21 7 22.05	7.730	17 40 55.9	32.13	13 21 40.7	21 10 9.48	7.711	17 29 14.9	32.52
14	21 10 27.39	7.714	17 27 59.3	32.57	14 21 39.9	21 13 14.38	7.696	17 16 9.2	32.95
15	21 13 32.36	7.699	17 14 52.2	33.01	15 21 39.0	21 16 18.91	7.681	17 2 53.2	33.38
16	21 16 36.97	7.684	17 1 34.7	33.44	16 21 38.1	21 19 23.07	7.666	16 49 27.0	33.80
17	21 19 41.20	7.669	16 48 7.0	33.86	17 21 37.2	21 22 26.86	7.650	16 35 50.7	34.22
18	21 22 45.07	7.653	16 34 29.2	34.28	18 21 36.4	21 25 30.27	7.634	16 22 4.4	34.63
19	21 25 48.56	7.637	16 20 41.5	34.69	19 21 35.5	21 28 33.31	7.619	16 8 8.4	35.03
20	21 28 51.67	7.622	16 6 44.0	35.09	20 21 34.6	21 31 35.98	7.603	15 54 2.9	35.43
21	21 31 54.41	7.606	15 52 37.0	35.48	21 21 33.7	21 34 38.28	7.588	15 39 48.0	35.81
22	21 34 56.79	7.591	15 38 20.7	35.87	22 21 32.8	21 37 40.21	7.572	15 25 24.0	36.19
23	21 37 58.80	7.575	15 23 55.1	36.25	23 21 31.9	21 40 41.77	7.557	15 10 50.9	36.56
24	21 41 0.44	7.560	15 9 20.6	36.62	24 21 31.0	21 43 42.96	7.542	14 56 9.0	36.92
25	21 44 1.70	7.545	14 54 37.2	36.98	25 21 30.0	21 46 43.76	7.526	14 41 18.6	37.27
26	21 47 2.59	7.529	14 39 45.3	37.33	26 21 29.1	21 49 44.19	7.510	14 26 19.7	37.62
27	21 50 3.09	7.513	14 24 45.0	37.68	27 21 28.1	21 52 44.25	7.494	14 11 12.6	37.96
28	21 53 3.22	7.497	14 9 36.4	38.02	28 21 27.2	21 55 43.93	7.479	13 55 57.5	38.29
29	21 56 2.98	7.482	13 54 19.9	38.35	29 21 26.2	21 58 43.23	7.463	13 40 34.6	38.61
30	21 59 2.36	7.466	13 38 55.5	38.67	30 21 25.3	22 1 42.16	7.447	13 25 4.0	38.93
31	22 2 1.38	7.451	13 23 23.5	38.99	31 21 24.2	22 4 40.72	7.432	13 9 25.9	39.24
Apr. 1	22 5 0.02	7.436	13 7 44.0	39.30	1 21 23.2	22 7 38.91	7.417	12 53 40.5	39.54
2	22 7 58.28	7.420	12 51 57.2	39.59	2 21 22.3	22 10 36.73	7.401	12 37 48.1	39.82
3	22 10 56.19	7.405	12 36 3.4	39.88	3 21 21.3	22 13 34.18	7.386	12 21 48.8	40.10
4	22 13 53.72	7.390	12 20 2.7	40.17	4 21 20.4	22 16 31.28	7.371	12 5 42.9	40.38
5	22 16 50.90	7.375	12 3 55.4	40.44	5 21 19.4	22 19 28.01	7.356	11 49 30.4	40.65
6	22 19 47.71	7.360	11 47 41.5	40.71	6 21 18.4	22 22 24.39	7.341	11 33 11.6	40.91
7	22 22 44.17	7.345	11 31 21.3	40.97	7 21 17.4	22 25 20.42	7.327	11 16 46.7	41.16
8	22 25 40.29	7.331	11 14 55.0	41.22	8 21 16.4	22 28 16.11	7.313	11 0 15.7	41.41
9	22 28 36.07	7.317	10 58 22.7	41.47	9 21 15.4	22 31 11.47	7.300	10 43 38.9	41.65
10	22 31 31.52	7.304	10 41 44.5	41.71	10 21 14.4	22 34 6.51	7.286	10 26 56.5	41.88
11	22 34 26.64	7.290	10 25 0.7	41.93	11 21 13.3	22 37 1.22	7.273	10 10 8.8	42.10
12	22 37 21.43	7.277	10 8 11.6	42.15	12 21 12.3	22 39 55.61	7.260	9 53 15.7	42.32
13	22 40 15.91	7.264	9 51 17.2	42.37	13 21 11.3	22 42 49.69	7.247	9 36 17.5	42.53
14	22 43 10.08	7.251	9 34 17.7	42.58	14 21 10.2	22 45 43.46	7.234	9 19 14.4	42.73
15	22 46 3.95	7.238	9 17 13.3	42.79	15 21 9.2	22 48 36.94	7.222	9 2 6.5	42.93
16	22 48 57.52	7.226	9 0 4.1	42.98	16 21 8.1	22 51 30.13	7.210	8 44 54.1	43.11
17	22 51 50.80	7.214	8 42 50.5	43.16	17 21 7.0	22 54 23.04	7.198	8 27 37.4	43.28
18	22 54 43.80	7.202	8 25 32.5	43.33	18 21 6.0	22 57 15.67	7.187	8 10 16.5	43.45
19	22 57 36.53	7.191	8 8 10.3	43.50	19 21 4.9	23 0 8.02	7.176	7 52 51.6	43.61
20	23 0 28.98	7.180	7 50 44.2	43.66	20 21 3.9	23 3 0.11	7.165	7 35 23.0	43.77
21	23 3 21.16	7.169	7 33 14.4	43.82	21 21 2.8	23 5 51.93	7.154	7 17 50.8	43.91
22	23 6 13.07	7.158	7 15 41.0	43.96	22 21 1.7	23 8 43.48	7.143	7 0 15.3	44.05
23	23 9 4.72	7.147	6 58 4.3	44.09	23 21 0.6	23 11 34.78	7.132	6 42 36.6	44.18
24	23 11 56.12	7.136	6 40 24.4	44.22	24 20 59.5	23 14 25.82	7.121	6 24 55.0	44.29
25	23 14 47.26	7.126	6 22 41.7	44.34	25 20 58.4	23 17 16.62	7.111	6 7 10.7	44.40
26	23 17 38.15	7.115	6 4 56.2	44.44	26 20 57.3	23 20 7.17	7.101	5 49 23.8	44.50
27	23 20 23.50	7.104	5 47 8.3	44.54	27 20 56.2	23 22 57.47	7.091	5 31 34.6	44.59
28	23 23 19.21	7.095	5 29 18.0	44.63	28 20 55.1	23 25 47.54	7.081	5 13 43.3	44.67
29	23 26 9.38	7.085	5 11 25.6	44.72	29 20 54.0	23 28 37.38	7.071	4 55 50.0	44.75
30	23 28 59.31	7.075	4 53 31.2	44.80	30 20 52.9	23 31 26.98	7.062	4 37 54.9	44.82
31	23 31 49.01	+7.066	-4 35 35.1	+44.87	31 20 51.8	23 34 16.36	+7.053	-4 19 58.3	+44.88

Date. 1881.	FOR WASHINGTON MEAN NOON.					FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.	
May 1	h m s	s	° ' "	"	d h m	h m s	s	° ' "	"	
	23 31 49.01	+7.066	-4 35 35.1	+44.87	1 20 51.8	23 34 16.36	+7.053	-4 19 58.3	+44.88	
	2 23 34 38.49	7.057	4 17 37.4	44.93	2 20 50.7	23 37 5.51	7.044	4 2 0.3	44.94	
	3 23 37 27.76	7.048	3 59 38.4	44.98	3 20 49.5	23 39 54.46	7.035	3 44 1.1	44.99	
	4 23 40 16.81	7.040	3 41 38.2	45.03	4 20 48.4	23 42 43.20	7.027	3 26 0.8	45.03	
	5 23 43 5.66	7.031	3 23 37.0	45.07	5 20 47.3	23 45 31.75	7.019	3 7 59.8	45.06	
	6 23 45 54.31	7.023	3 5 34.9	45.10	6 20 46.2	23 48 20.10	7.011	2 49 58.0	45.09	
	7 23 48 42.77	7.015	2 47 32.2	45.13	7 20 45.0	23 51 8.28	7.003	2 31 55.7	45.11	
	8 23 51 31.05	7.008	2 29 29.0	45.14	8 20 43.9	23 53 56.27	6.996	2 13 53.0	45.12	
	9 23 54 19.16	7.001	2 11 25.4	45.15	9 20 42.7	23 56 44.11	6.990	1 55 50.1	45.12	
	10 23 57 7.10	6.994	1 53 21.6	45.15	10 20 41.6	23 59 31.79	6.983	1 37 47.2	45.12	
	11 23 59 54.89	6.988	1 35 17.8	45.15	11 20 40.4	0 2 19.32	6.977	1 19 44.4	45.11	
	12 0 2 42.54	6.982	1 17 14.2	45.14	12 20 39.3	0 5 6.71	6.971	1 1 42.0	45.09	
	13 0 5 30.05	6.976	0 59 11.0	45.12	13 20 38.1	0 7 53.96	6.966	0 43 40.1	45.07	
	14 0 8 17.41	6.971	0 41 8.4	45.10	14 20 37.0	0 10 41.08	6.961	0 25 38.8	45.04	
	15 0 11 4.65	6.966	0 23 6.3	45.07	15 20 35.8	0 13 28.09	6.956	-0 7 38.3	45.00	
	16 0 13 51.78	6.961	-0 5 5.1	45.03	16 20 34.7	0 16 14.99	6.952	+0 10 21.1	44.95	
	17 0 16 38.80	6.956	+0 12 55.1	44.98	17 20 33.5	0 19 1.79	6.947	0 28 19.3	44.89	
	18 0 19 25.71	6.952	0 30 54.0	44.92	18 20 32.4	0 21 48.48	6.942	0 46 16.2	44.83	
	19 0 22 12.52	6.948	0 48 51.4	44.86	19 20 31.2	0 24 35.06	6.938	1 4 11.4	44.76	
	20 0 24 59.22	6.944	1 6 47.3	44.79	20 20 30.0	0 27 21.54	6.935	1 22 4.8	44.68	
	21 0 27 45.83	6.940	1 24 41.3	44.71	21 20 28.9	0 30 7.94	6.932	1 39 56.2	44.59	
	22 0 30 32.35	6.936	1 42 33.3	44.62	22 20 27.7	0 32 54.26	6.928	1 57 45.5	44.50	
	23 0 33 18.79	6.933	2 0 23.2	44.53	23 20 26.5	0 35 40.49	6.924	2 15 32.6	44.40	
	24 0 36 5.14	6.930	2 18 10.8	44.43	24 20 25.4	0 38 26.64	6.921	2 33 17.2	44.30	
	25 0 38 51.42	6.927	2 35 55.8	44.32	25 20 24.2	0 41 12.71	6.918	2 50 59.1	44.19	
	26 0 41 37.61	6.924	2 53 38.2	44.20	26 20 23.0	0 43 58.70	6.915	3 8 38.1	44.06	
	27 0 44 23.73	6.920	3 11 17.6	44.08	27 20 21.9	0 46 44.62	6.912	3 26 14.0	43.93	
	28 0 47 9.77	6.917	3 28 53.9	43.94	28 20 20.7	0 49 30.47	6.909	3 43 46.7	43.79	
	29 0 49 55.74	6.914	3 46 26.9	43.80	29 20 19.5	0 52 16.25	6.906	4 1 16.0	43.64	
	30 0 52 41.64	6.911	4 3 56.5	43.66	30 20 18.3	0 55 1.96	6.903	4 18 41.7	43.49	
	31 0 55 27.48	6.909	4 21 22.6	43.50	31 20 17.1	0 57 47.61	6.901	4 36 3.8	43.34	
June 1	0 58 13.26	6.906	4 38 44.8	43.34	1 20 16.0	1 0 33.20	6.899	4 53 22.0	43.18	
	2 1 0 58.99	6.904	4 56 3.3	43.18	2 20 14.8	1 3 18.75	6.897	5 10 36.2	43.01	
	3 1 3 44.66	6.902	5 13 17.7	43.02	3 20 13.6	1 6 4.25	6.895	5 27 46.2	42.83	
	4 1 6 30.29	6.900	5 30 27.9	42.84	4 20 12.4	1 8 49.71	6.893	5 44 52.0	42.65	
	5 1 9 15.88	6.899	5 47 33.8	42.65	5 20 11.2	1 11 35.14	6.892	6 1 53.3	42.46	
	6 1 12 1.44	6.898	6 4 35.2	42.46	6 20 10.0	1 14 20.53	6.891	6 18 49.9	42.26	
	7 1 14 46.97	6.897	6 21 32.0	42.26	7 20 8.9	1 17 5.91	6.890	6 35 41.8	42.05	
	8 1 17 32.48	6.896	6 38 23.9	42.06	8 20 7.7	1 19 51.27	6.890	6 52 28.8	41.85	
	9 1 20 17.97	6.895	6 55 10.9	41.86	9 20 6.5	1 22 36.62	6.889	7 9 10.8	41.64	
	10 1 23 3.45	6.895	7 11 52.9	41.64	10 20 5.3	1 25 21.96	6.889	7 25 47.6	41.42	
	11 1 25 48.93	6.895	7 28 29.6	41.42	11 20 4.1	1 28 7.30	6.889	7 42 19.2	41.20	
	12 1 28 34.40	6.895	7 45 1.1	41.20	12 20 2.9	1 30 52.64	6.889	7 58 45.3	40.97	
	13 1 31 19.88	6.895	8 1 27.1	40.97	13 20 1.8	1 33 37.98	6.889	8 15 5.8	40.73	
	14 1 34 5.36	6.895	8 17 47.5	40.73	14 20 0.6	1 36 23.33	6.890	8 31 20.5	40.49	
	15 1 36 50.85	6.896	8 34 2.1	40.49	15 19 59.4	1 39 8.70	6.890	8 47 29.4	40.24	
	16 1 39 36.35	6.896	8 50 10.7	40.23	16 19 58.2	1 41 54.07	6.891	9 3 32.1	39.96	
	17 1 42 21.86	6.897	9 6 13.2	39.97	17 19 57.0	1 44 39.45	6.891	9 19 28.6	39.71	
	18 1 45 7.38	6.897	9 22 9.5	39.71	18 19 55.9	1 47 24.84	6.891	9 35 18.7	39.44	
	19 1 47 52.90	6.897	9 37 59.3	39.43	19 19 54.7	1 50 10.24	6.892	9 51 2.3	39.17	
	20 1 50 38.44	6.898	9 53 42.6	39.17	20 19 53.5	1 52 55.65	6.892	10 6 39.3	38.89	
	21 1 53 23.99	6.898	10 9 19.2	38.88	21 19 52.3	1 55 41.07	6.892	10 22 9.5	38.61	
	22 1 56 9.55	6.898	10 24 48.9	38.59	22 19 51.1	1 58 26.49	6.892	10 37 32.7	38.32	
	23 1 58 55.10	6.898	10 40 11.7	38.30	23 19 50.0	2 1 11.91	6.892	10 52 48.9	38.02	
	24 2 1 40.65	6.898	10 55 27.4	38.00	24 19 48.8	2 3 57.32	6.892	11 7 57.8	37.72	
	25 2 4 26.20	6.898	11 10 35.8	37.69	25 19 47.6	2 6 42.72	6.891	11 22 59.4	37.41	
	26 2 7 11.74	6.897	11 25 36.8	37.38	26 19 46.4	2 9 28.11	6.891	11 37 53.5	37.09	
	27 2 9 57.27	6.897	11 40 30.3	37.06	27 19 45.2	2 12 13.50	6.891	11 52 39.9	36.77	
	28 2 12 42.70	6.897	11 55 16.1	36.74	28 19 44.0	2 14 58.88	6.890	12 7 18.6	36.45	
	29 2 15 28.30	6.896	12 9 54.1	36.42	29 19 42.8	2 17 44.24	6.890	12 21 49.4	36.12	
	30 2 18 13.79	6.895	12 24 24.2	36.09	30 19 41.6	2 20 29.58	6.889	12 36 12.3	35.78	
	31 2 20 59.27	+6.895	+12 38 46.4	+35.75	31 19 40.5	2 23 14.91	+6.889	+12 50 27.1	+35.44	

Date. 1881.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
July 1	^h 20 ^m 59.27 ^s	+6.895	+12° 38' 46.4"	+35.75	^d 1 ^h 19 ^m 40.5	^h 23 ^m 14.91 ^s	+6.889	+12° 50' 27.1"	+35.44
2	2 23 44.73	6.894	12 53 0.4	35.42	2 19 39.3	2 26 0.22	6.888	13 4 33.7	35.10
3	2 26 30.18	6.893	13 7 6.3	35.07	3 19 38.1	2 28 45.52	6.887	13 18 32.1	34.75
4	2 29 15.61	6.892	13 21 3.8	34.72	4 19 36.9	2 31 30.80	6.886	13 32 22.1	34.40
5	2 32 1.02	6.892	13 34 53.0	34.37	5 19 35.7	2 34 16.06	6.885	13 46 3.7	34.05
6	2 34 46.41	6.891	13 48 33.6	34.02	6 19 34.5	2 37 1.30	6.885	13 59 36.7	33.69
7	2 37 31.78	6.890	14 2 5.7	33.66	7 19 33.4	2 39 46.52	6.884	14 13 1.1	33.33
8	2 40 17.13	6.889	14 15 29.1	33.29	8 19 32.2	2 42 31.72	6.883	14 26 16.6	32.97
9	2 43 2.47	6.888	14 28 43.7	32.93	9 19 31.0	2 45 16.91	6.882	14 39 23.4	32.60
10	2 45 47.78	6.888	14 41 49.5	32.55	10 19 29.8	2 48 2.07	6.881	14 52 21.3	32.22
11	2 48 33.08	6.887	14 54 46.3	32.18	11 19 28.6	2 50 47.19	6.879	15 5 10.1	31.85
12	2 51 18.34	6.885	15 7 34.1	31.80	12 19 27.4	2 53 32.28	6.878	15 17 49.9	31.47
13	2 54 3.56	6.883	15 20 12.7	31.41	13 19 26.2	2 56 17.34	6.877	15 30 20.4	31.08
14	2 56 48.74	6.882	15 32 42.1	31.02	14 19 25.1	2 59 2.36	6.875	15 42 41.6	30.68
15	2 59 33.89	6.880	15 45 2.1	30.63	15 19 23.9	3 1 47.34	6.873	15 54 53.5	30.29
16	3 2 18.99	6.878	15 57 12.8	30.25	16 19 22.7	3 4 32.26	6.870	16 6 55.9	29.90
17	3 5 4.04	6.876	16 9 14.0	29.85	17 19 21.5	3 7 17.12	6.867	16 18 48.8	29.50
18	3 7 49.02	6.873	16 21 5.7	29.45	18 19 20.3	3 10 1.91	6.864	16 30 32.1	29.10
19	3 10 33.93	6.869	16 32 47.7	29.05	19 19 19.1	3 12 46.61	6.860	16 42 5.7	28.69
20	3 13 18.75	6.865	16 44 20.0	28.64	20 19 17.9	3 15 31.22	6.856	16 53 29.6	28.28
21	3 16 3.48	6.861	16 55 42.5	28.23	21 19 16.7	3 18 15.72	6.851	17 4 43.5	27.87
22	3 18 48.10	6.856	17 6 55.1	27.82	22 19 15.5	3 21 0.10	6.846	17 15 47.5	27.46
23	3 21 32.59	6.851	17 17 57.7	27.40	23 19 14.3	3 23 44.36	6.841	17 26 41.6	27.04
24	3 24 16.96	6.846	17 28 50.4	26.98	24 19 13.1	3 26 28.49	6.835	17 37 25.7	26.62
25	3 27 1.19	6.840	17 39 33.1	26.56	25 19 11.9	3 29 12.47	6.828	17 47 59.7	26.20
26	3 29 45.27	6.833	17 50 5.6	26.14	26 19 10.7	3 31 56.28	6.821	17 58 23.6	25.78
27	3 32 29.20	6.826	18 0 28.0	25.72	27 19 9.5	3 34 39.92	6.814	18 8 37.4	25.36
28	3 35 12.94	6.818	18 10 40.2	25.30	28 19 8.2	3 37 23.38	6.807	18 18 41.0	24.94
29	3 37 56.51	6.811	18 20 42.2	24.87	29 19 7.0	3 40 6.66	6.799	18 28 34.4	24.51
30	3 40 39.88	6.803	18 30 34.0	24.44	30 19 5.8	3 42 49.73	6.790	18 38 17.5	24.08
31	3 43 23.05	6.795	18 40 15.4	24.01	31 19 4.6	3 45 32.60	6.782	18 47 50.3	23.65
Aug. 1	3 46 6.01	6.786	18 49 46.6	23.58	1 19 3.3	3 48 15.25	6.773	18 57 12.9	23.22
2	3 48 48.75	6.776	18 59 7.5	23.15	2 19 2.1	3 50 57.67	6.763	19 6 25.1	22.79
3	3 51 31.27	6.766	19 8 18.1	22.72	3 19 0.9	3 53 39.86	6.753	19 15 27.0	22.36
4	3 54 13.55	6.756	19 17 18.3	22.29	4 18 59.6	3 56 21.80	6.742	19 24 18.7	21.93
5	3 56 55.58	6.746	19 26 8.3	21.86	5 18 58.4	3 59 3.50	6.732	19 33 0.0	21.50
6	3 59 37.36	6.735	19 34 47.9	21.43	6 18 57.1	4 1 44.94	6.721	19 41 31.0	21.07
7	4 2 18.88	6.724	19 43 17.2	21.00	7 18 55.9	4 4 26.11	6.709	19 49 51.7	20.64
8	4 5 0.14	6.712	19 51 36.1	20.57	8 18 54.6	4 7 7.00	6.697	19 58 2.0	20.21
9	4 7 41.10	6.700	19 59 44.7	20.14	9 18 53.4	4 9 47.59	6.685	20 6 2.0	19.78
10	4 10 21.77	6.688	20 7 42.9	19.71	10 18 52.1	4 12 27.88	6.672	20 13 51.7	19.35
11	4 13 2.13	6.675	20 15 30.8	19.28	11 18 50.8	4 15 7.85	6.658	20 21 31.1	18.92
12	4 15 42.18	6.661	20 23 8.4	18.85	12 18 49.6	4 17 47.48	6.644	20 29 0.2	18.49
13	4 18 21.88	6.647	20 30 35.7	18.42	13 18 48.3	4 20 26.77	6.629	20 36 19.0	18.07
14	4 21 1.23	6.632	20 37 52.8	18.00	14 18 47.0	4 23 5.69	6.613	20 43 27.6	17.65
15	4 23 40.21	6.616	20 44 59.6	17.57	15 18 45.7	4 25 44.22	6.597	20 50 26.0	17.22
16	4 26 18.81	6.599	20 51 56.1	17.14	16 18 44.4	4 28 22.36	6.580	20 57 14.2	16.80
17	4 28 56.99	6.582	20 58 42.4	16.72	17 18 43.1	4 31 0.07	6.562	21 3 52.2	16.37
18	4 31 34.75	6.564	21 5 18.5	16.29	18 18 41.8	4 33 37.34	6.543	21 10 20.1	15.95
19	4 34 12.06	6.545	21 11 44.5	15.87	19 18 40.4	4 36 14.14	6.523	21 16 37.9	15.54
20	4 36 48.90	6.525	21 18 0.5	15.46	20 18 39.1	4 38 50.46	6.503	21 22 45.7	15.12
21	4 39 25.26	6.504	21 24 6.5	15.04	21 18 37.7	4 41 26.28	6.482	21 28 43.7	14.71
22	4 42 1.11	6.483	21 30 2.5	14.62	22 18 36.4	4 44 1.59	6.459	21 34 31.7	14.30
23	4 44 36.44	6.460	21 35 48.6	14.22	23 18 35.0	4 46 36.35	6.436	21 40 9.8	13.89
24	4 47 11.23	6.437	21 41 24.8	13.81	24 18 33.7	4 49 10.55	6.413	21 45 38.2	13.48
25	4 49 45.45	6.414	21 46 51.3	13.40	25 18 32.3	4 51 44.17	6.388	21 50 56.9	13.08
26	4 52 19.08	6.389	21 52 8.2	13.00	26 18 30.9	4 54 17.19	6.363	21 56 6.1	12.68
27	4 54 52.10	6.363	21 57 15.4	12.60	27 18 29.5	4 56 49.59	6.337	22 1 5.7	12.28
28	4 57 24.50	6.336	22 2 13.1	12.21	28 18 28.1	4 59 21.35	6.310	22 5 55.8	11.89
29	4 59 56.26	6.309	22 7 1.4	11.82	29 18 26.7	5 1 52.45	6.282	22 10 36.7	11.51
30	5 2 27.36	6.281	22 11 40.4	11.43	30 18 25.2	5 4 22.88	6.253	22 15 8.4	11.13
31	5 4 57.78	+6.253	+22 16 10.2	+11.05	31 18 23.8	5 6 52.62	+6.224	+22 19 30.9	+10.75

Date. 1881.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
Sept. 1	^h 5 ^m 7 ^s 27.51	+6.224	+22° 20' 30.9"	+10.67	^d 1 ^h 18 ^m 22.4	^h 5 ^m 9 ^s 21.66	+6.194	+22° 23' 44.5"	+10.38
2	5 9 56.54	6.194	22 24 42.7	10.30	2 18 20.9	5 11 49.96	6.165	22 27 49.1	10.01
3	5 12 24.85	6.164	22 28 45.5	9.93	3 18 19.4	5 14 17.58	6.134	22 31 44.9	9.64
4	5 14 52.42	6.133	22 32 39.5	9.56	4 18 17.9	5 16 44.43	6.102	22 35 32.0	9.28
5	5 17 19.24	6.101	22 36 24.7	9.21	5 18 16.4	5 19 10.51	6.069	22 39 10.5	8.93
6	5 19 45.29	6.068	22 40 1.4	8.85	6 18 14.9	5 21 35.80	6.036	22 42 40.6	8.58
7	5 22 10.54	6.034	22 43 29.7	8.50	7 18 13.4	5 24 0.27	6.002	22 46 2.5	8.24
8	5 24 34.96	6.000	22 46 49.8	8.16	8 18 11.8	5 26 23.91	5.967	22 49 16.2	7.91
9	5 26 58.55	5.965	22 50 1.8	7.83	9 18 10.3	5 28 46.70	5.931	22 52 21.8	7.57
10	5 29 21.28	5.929	22 53 5.7	7.50	10 18 8.7	5 31 8.62	5.894	22 55 19.5	7.24
11	5 31 43.14	5.892	22 56 1.7	7.17	11 18 7.1	5 33 29.63	5.856	22 58 9.5	6.92
12	5 34 4.09	5.853	22 58 50.0	6.86	12 18 5.5	5 35 49.72	5.817	23 0 51.9	6.61
13	5 36 24.10	5.813	23 1 30.7	6.54	13 18 3.9	5 38 8.85	5.777	23 3 26.9	6.30
14	5 38 43.15	5.773	23 4 4.1	6.24	14 18 2.2	5 40 27.00	5.735	23 5 54.6	6.00
15	5 41 1.20	5.731	23 6 30.2	5.94	15 18 0.6	5 42 44.14	5.692	23 8 15.2	5.71
16	5 43 18.25	5.688	23 8 49.3	5.65	16 17 58.9	5 45 0.24	5.649	23 10 29.0	5.43
17	5 45 34.25	5.644	23 11 1.5	5.37	17 17 57.2	5 47 15.28	5.604	23 12 36.1	5.16
18	5 47 49.16	5.598	23 13 7.1	5.10	18 17 55.5	5 49 29.22	5.557	23 14 36.6	4.89
19	5 50 2.97	5.551	23 15 6.2	4.83	19 17 53.8	5 51 42.02	5.509	23 16 30.8	4.62
20	5 52 15.63	5.503	23 16 58.9	4.57	20 17 52.1	5 53 53.65	5.459	23 18 18.8	4.37
21	5 54 27.12	5.453	23 18 45.6	4.32	21 17 50.3	5 56 4.08	5.409	23 20 0.9	4.13
22	5 56 37.41	5.403	23 20 26.3	4.08	22 17 48.5	5 58 13.30	5.358	23 21 37.3	3.90
23	5 58 46.47	5.351	23 22 1.3	3.85	23 17 46.7	6 0 21.27	5.306	23 23 8.2	3.67
24	6 0 54.27	5.298	23 23 30.9	3.62	24 17 44.9	6 2 27.97	5.252	23 24 33.9	3.46
25	6 3 0.79	5.244	23 24 55.3	3.40	25 17 43.0	6 4 33.36	5.197	23 25 54.3	3.25
26	6 5 6.00	5.189	23 26 14.5	3.19	26 17 41.2	6 6 37.42	5.141	23 27 9.8	3.05
27	6 7 9.88	5.133	23 27 28.9	3.00	27 17 39.3	6 8 40.13	5.084	23 28 20.6	2.86
28	6 9 12.39	5.075	23 28 38.6	2.81	28 17 37.4	6 10 41.46	5.026	23 29 27.0	2.68
29	6 11 13.51	5.017	23 29 43.9	2.64	29 17 35.4	6 12 41.37	4.966	23 30 29.2	2.51
30	6 13 13.20	4.957	23 30 45.1	2.47	30 17 33.5	6 14 39.85	4.905	23 31 27.4	2.35
Oct. 1	6 15 11.45	4.896	23 31 42.4	2.31	1 17 31.5	6 16 36.86	4.844	23 32 21.9	2.19
2	6 17 8.22	4.834	23 32 35.9	2.15	2 17 29.5	6 18 32.38	4.782	23 33 12.8	2.04
3	6 19 3.50	4.771	23 33 26.0	2.01	3 17 27.5	6 20 26.38	4.717	23 34 0.4	1.91
4	6 20 57.24	4.707	23 34 12.8	1.88	4 17 25.4	6 22 18.83	4.652	23 34 44.9	1.80
5	6 22 49.42	4.641	23 34 56.6	1.77	5 17 23.3	6 24 9.70	4.586	23 35 26.6	1.69
6	6 24 40.01	4.574	23 35 37.7	1.66	6 17 21.2	6 25 58.96	4.518	23 36 5.8	1.58
7	6 26 28.98	4.506	23 36 16.2	1.56	7 17 19.0	6 27 46.57	4.448	23 36 42.6	1.49
8	6 28 16.29	4.436	23 36 52.5	1.47	8 17 16.8	6 29 32.50	4.378	23 37 17.4	1.41
9	6 30 1.90	4.364	23 37 26.8	1.40	9 17 14.6	6 31 16.70	4.305	23 37 50.4	1.34
10	6 31 45.77	4.290	23 37 59.4	1.34	10 17 12.4	6 32 59.14	4.230	23 38 21.9	1.29
11	6 33 27.85	4.216	23 38 30.6	1.28	11 17 10.2	6 34 39.77	4.155	23 38 52.3	1.25
12	6 35 8.13	4.140	23 39 0.7	1.23	12 17 7.9	6 36 18.57	4.077	23 39 21.7	1.21
13	6 36 46.55	4.061	23 39 30.0	1.20	13 17 5.5	6 37 55.47	3.997	23 39 50.4	1.19
14	6 38 23.05	3.980	23 39 58.6	1.18	14 17 3.2	6 39 30.43	3.915	23 40 18.7	1.18
15	6 39 57.59	3.898	23 40 27.0	1.18	15 17 0.8	6 41 3.40	3.831	23 40 47.1	1.18
16	6 41 30.13	3.813	23 40 55.3	1.19	16 16 58.4	6 42 34.34	3.746	23 41 15.6	1.20
17	6 43 0.62	3.726	23 41 24.0	1.21	17 16 55.9	6 44 3.20	3.658	23 41 44.7	1.23
18	6 44 29.01	3.638	23 41 53.4	1.24	18 16 53.5	6 45 29.93	3.568	23 42 14.6	1.27
19	6 45 53.25	3.548	23 42 23.7	1.29	19 16 50.9	6 46 54.49	3.476	23 42 45.7	1.32
20	6 47 19.29	3.455	23 42 55.3	1.35	20 16 48.4	6 48 16.82	3.383	23 43 18.2	1.39
21	6 48 41.09	3.361	23 43 23.3	1.41	21 16 45.7	6 49 36.88	3.288	23 43 52.4	1.47
22	6 50 0.61	3.265	23 44 3.1	1.49	22 16 43.1	6 50 54.64	3.190	23 44 23.6	1.56
23	6 51 17.80	3.167	23 44 40.0	1.59	23 16 40.4	6 52 10.03	3.090	23 45 7.0	1.66
24	6 52 32.61	3.066	23 45 19.2	1.69	24 16 37.7	6 53 23.01	2.989	23 45 48.0	1.77
25	6 53 44.98	2.964	23 46 1.1	1.80	25 16 35.0	6 54 33.55	2.887	23 46 31.7	1.88
26	6 54 54.88	2.860	23 46 45.8	1.92	26 16 32.2	6 55 41.58	2.782	23 47 18.5	2.01
27	6 56 2.26	2.754	23 47 33.7	2.06	27 16 29.3	6 56 47.07	2.675	23 48 8.6	2.16
28	6 57 7.08	2.647	23 48 25.0	2.21	28 16 26.4	6 57 49.97	2.566	23 49 2.3	2.32
29	6 58 9.29	2.537	23 49 20.0	2.37	29 16 23.5	6 58 50.26	2.456	23 49 59.9	2.49
30	6 59 8.85	2.426	23 50 19.0	2.55	30 16 20.5	6 59 47.88	2.343	23 51 1.6	2.67
31	7 0 5.72	2.312	23 51 22.3	2.73	31 16 17.5	7 0 42.76	2.229	23 52 7.8	2.86
32	7 0 59.84	+2.196	+23 52 30.1	+2.93	32 16 14.4	7 1 34.88	+2.113	+23 53 18.6	+3.05

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	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.	
Nov. 1	h m s 7 0 59.84	+2.196	+23 52 30.1	+2.93	d h m 1 16 14.4	h m s 7 1 34.88	+2.113	+23 53 18.6	+3.05	
2	7 1 51.16	2.079	23 53 42.6	3.13	2 16 11.3	7 2 24.19	1.994	23 54 34.1	3.25	
3	7 2 39.64	1.959	23 54 59.9	3.34	3 16 8.1	7 3 10.62	1.873	23 55 54.8	3.47	
4	7 3 25.22	1.837	23 56 22.4	3.55	4 16 4.9	7 3 54.12	1.751	23 57 20.7	3.69	
5	7 4 7.85	1.713	23 57 50.3	3.78	5 16 1.7	7 4 34.65	1.626	23 58 52.1	3.93	
6	7 4 47.47	1.587	23 59 23.9	4.02	6 15 58.4	7 5 12.16	1.498	24 0 29.3	4.18	
7	7 5 24.04	1.458	24 1 3.3	4.27	7 15 55.0	7 5 46.59	1.369	24 2 12.5	4.42	
8	7 6 57.49	1.324	24 2 48.7	4.52	8 15 51.6	7 6 17.88	1.237	24 4 1.8	4.68	
9	7 7 27.78	1.194	24 4 40.4	4.79	9 15 48.1	7 6 45.97	1.102	24 5 57.5	4.95	
10	7 8 54.84	1.059	24 6 38.6	5.06	10 15 44.6	7 7 10.80	0.965	24 7 59.7	5.23	
11	7 9 18.60	0.921	24 8 43.4	5.34	11 15 41.0	7 7 32.33	0.826	24 10 8.6	5.52	
12	7 10 39.02	0.780	24 10 54.9	5.62	12 15 37.4	7 7 50.50	0.685	24 12 24.3	5.80	
13	7 11 56.02	0.636	24 13 13.4	5.91	13 15 33.7	7 8 5.22	0.541	24 14 47.0	6.09	
14	7 12 9.56	0.490	24 15 39.0	6.21	14 15 30.0	7 8 16.45	0.395	24 17 16.7	6.39	
15	7 13 19.59	0.343	24 18 11.7	6.51	15 15 26.2	7 8 24.16	0.247	24 19 53.5	6.69	
16	7 14 26.05	0.194	24 20 51.4	6.81	16 15 22.3	7 8 28.30	+0.097	24 22 37.5	6.98	
17	7 15 28.91	+0.043	24 23 38.4	7.10	17 15 18.4	7 8 28.83	-0.054	24 25 28.7	7.28	
18	7 16 28.11	-0.110	24 26 32.5	7.40	18 15 14.4	7 8 25.70	0.207	24 28 26.9	7.57	
19	7 17 23.62	0.265	24 29 33.7	7.69	19 15 10.4	7 8 18.87	0.362	24 31 32.0	7.86	
20	7 18 15.41	0.421	24 32 41.9	7.99	20 15 6.3	7 8 8.31	0.518	24 34 44.1	8.14	
21	7 19 3.44	0.577	24 35 57.2	8.27	21 15 2.1	7 7 54.01	0.674	24 38 3.1	8.42	
22	7 20 47.70	0.735	24 39 19.2	8.55	22 14 57.9	7 7 35.95	0.831	24 41 28.6	8.69	
23	7 21 28.16	0.893	24 42 47.8	8.82	23 14 53.6	7 7 14.11	0.989	24 45 0.5	8.96	
24	7 22 4.82	1.052	24 46 22.7	9.08	24 14 49.2	7 6 48.49	1.146	24 48 38.6	9.21	
25	7 23 37.68	1.210	24 50 3.9	9.34	25 14 44.8	7 6 19.10	1.304	24 52 22.6	9.45	
26	7 24 6.74	1.368	24 53 50.8	9.57	26 14 40.3	7 5 45.93	1.460	24 56 12.3	9.68	
27	7 25 32.00	1.526	24 57 43.4	9.80	27 14 35.8	7 5 9.00	1.616	25 0 7.3	9.89	
28	7 26 43.47	1.683	25 1 41.1	10.01	28 14 31.2	7 4 28.33	1.772	25 4 7.3	10.09	
29	7 27 41.19	1.839	25 5 43.7	10.20	29 14 26.5	7 3 43.94	1.927	25 8 11.8	10.27	
30	7 28 25.18	1.994	25 9 50.6	10.37	30 14 21.8	7 2 55.86	2.079	25 12 20.4	10.43	
Dec. 1	7 29 35.46	2.148	25 14 1.4	10.52	1 14 17.0	7 2 4.12	2.231	25 16 32.5	10.57	
2	7 30 42.07	2.300	25 18 15.7	10.65	2 14 12.1	7 1 8.76	2.380	25 20 47.7	10.68	
3	7 31 45.07	2.449	25 22 33.0	10.77	3 14 7.2	7 0 9.85	2.527	25 25 5.5	10.78	
4	6 59 44.51	2.596	25 26 52.8	10.87	4 14 2.2	6 59 7.44	2.672	25 29 25.6	10.87	
5	6 58 40.44	2.741	25 31 14.6	10.94	5 13 57.2	6 58 1.59	2.813	25 33 47.5	10.93	
6	6 57 32.93	2.883	25 35 37.8	10.98	6 13 52.1	6 56 52.37	2.952	25 38 10.4	10.96	
7	6 56 22.06	3.022	25 40 1.8	11.00	7 13 47.0	6 55 39.85	3.088	25 42 33.6	10.96	
8	6 55 7.90	3.156	25 44 26.0	10.99	8 13 41.8	6 54 24.13	3.219	25 46 56.6	10.93	
9	6 53 50.57	3.287	25 48 49.6	10.96	9 13 36.6	6 53 5.31	3.346	25 51 18.7	10.88	
10	6 52 30.14	3.413	25 53 12.1	10.89	10 13 31.3	6 51 43.50	3.468	25 55 39.3	10.80	
11	6 51 6.76	3.533	25 57 32.7	10.80	11 13 25.9	6 50 18.82	3.585	25 59 57.5	10.70	
12	6 49 40.54	3.648	26 1 50.7	10.68	12 13 20.6	6 48 51.42	3.695	26 4 12.8	10.57	
13	6 48 11.64	3.757	26 6 5.5	10.54	13 13 15.2	6 47 21.44	3.800	26 8 24.7	10.41	
14	6 46 40.20	3.859	26 10 16.4	10.36	14 13 9.7	6 45 49.02	3.898	26 12 32.3	10.22	
15	6 45 6.38	3.955	26 14 22.8	10.16	15 13 4.1	6 44 14.32	3.989	26 16 35.0	10.00	
16	6 43 30.34	4.044	26 18 24.0	9.92	16 12 58.6	6 42 37.54	4.071	26 20 32.1	9.75	
17	6 41 52.30	4.122	26 22 19.3	9.66	17 12 53.0	6 40 58.88	4.146	26 24 23.0	9.47	
18	6 40 12.45	4.193	26 26 8.0	9.38	18 12 47.4	6 39 18.54	4.211	26 28 7.1	9.18	
19	6 38 30.99	4.256	26 29 49.6	9.07	19 12 41.8	6 37 36.72	4.268	26 31 43.7	8.86	
20	6 36 48.15	4.311	26 33 23.4	8.73	20 12 36.2	6 35 53.64	4.316	26 35 12.3	8.51	
21	6 35 4.14	4.353	26 36 48.8	8.37	21 12 30.5	6 34 9.52	4.355	26 38 32.5	8.15	
22	6 33 19.19	4.388	26 40 5.4	8.00	22 12 24.8	6 32 24.57	4.385	26 41 43.6	7.77	
23	6 31 33.51	4.413	26 43 12.8	7.61	23 12 19.1	6 30 39.04	4.404	26 44 45.4	7.37	
24	6 29 47.36	4.428	26 46 10.6	7.20	24 12 13.4	6 28 53.17	4.413	26 47 37.3	6.96	
25	6 28 0.98	4.433	26 48 58.4	6.78	25 12 7.7	6 27 7.19	4.413	26 50 19.3	6.54	
26	6 26 14.61	4.428	26 51 36.0	6.35	26 12 2.0	6 25 21.34	4.402	26 52 51.0	6.10	
27	6 24 28.47	4.413	26 54 3.1	5.91	27 11 56.4	6 23 35.83	4.385	26 55 12.3	5.66	
28	6 22 42.80	4.389	26 56 19.6	5.47	28 11 50.7	6 21 50.89	4.356	26 57 23.1	5.23	
29	6 20 57.82	4.355	26 58 25.5	5.02	29 11 45.0	6 20 6.74	4.318	26 59 23.4	4.79	
30	6 19 13.74	4.313	27 0 20.8	4.58	30 11 39.4	6 18 23.59	4.273	27 1 13.0	4.35	
31	6 17 30.79	4.263	27 2 5.4	4.14	31 11 33.7	6 16 41.64	4.220	27 2 52.1	3.92	
32	6 15 49.14	-4.204	+27 3 39.5	+3.70	32 11 28.1	6 15 1.04	-4.160	+27 4 21.4	+3.48	

Date. 1881.	FOR WASHINGTON MEAN NOON.					FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.	
Jan. 1	^h 0 ^m 42 ^s 21.43	+0.843	[°] 3 ['] 8 ["] 48.1	+ 6.14	^d 1 ^h 5 ^m 55.5	^h 0 ^m 42 ^s 26.44	+0.848	[°] 3 ['] 9 ["] 24.6	+ 6.17	
2	0 42 41.99	0.870	3 11 17.6	6.31	2 5 51.9	0 42 47.11	0.875	3 11 54.7	6.34	
3	0 43 3.21	0.897	3 13 51.1	6.48	3 5 48.3	0 43 8.43	0.902	3 14 28.8	6.50	
4	0 43 25.08	0.924	3 16 28.5	6.64	4 5 44.7	0 43 30.40	0.929	3 17 6.7	6.66	
5	0 43 47.59	0.951	3 19 9.9	6.80	5 5 41.2	0 43 53.01	0.955	3 19 48.6	6.82	
6	0 44 10.74	0.978	3 21 55.1	6.96	6 5 37.6	0 44 16.25	0.981	3 22 34.3	6.98	
7	0 44 34.52	1.004	3 24 44.1	7.12	7 5 34.1	0 44 40.12	1.007	3 25 23.8	7.14	
8	0 44 58.91	1.030	3 27 36.8	7.27	8 5 30.6	0 45 4.59	1.033	3 28 16.9	7.29	
9	0 45 23.92	1.055	3 30 33.2	7.42	9 5 27.1	0 45 29.68	1.058	3 31 13.7	7.44	
10	0 45 49.54	1.080	3 33 33.2	7.57	10 5 23.6	0 45 55.37	1.083	3 34 14.1	7.59	
11	0 46 15.75	1.105	3 36 36.9	7.72	11 5 20.1	0 46 21.65	1.108	3 37 18.0	7.74	
12	0 46 42.56	1.129	3 39 44.0	7.87	12 5 16.6	0 46 48.53	1.132	3 40 25.5	7.88	
13	0 47 9.95	1.153	3 42 54.6	8.01	13 5 13.2	0 47 15.98	1.156	3 43 36.4	8.02	
14	0 47 37.92	1.177	3 46 8.6	8.15	14 5 9.8	0 47 44.00	1.180	3 46 50.7	8.16	
15	0 48 6.46	1.201	3 49 26.0	8.29	15 5 6.3	0 48 12.59	1.203	3 50 8.3	8.30	
16	0 48 35.56	1.224	3 52 46.7	8.43	16 5 2.9	0 48 41.74	1.226	3 53 29.2	8.44	
17	0 49 5.22	1.247	3 56 10.6	8.56	17 4 59.4	0 49 11.45	1.249	3 56 53.3	8.57	
18	0 49 35.43	1.270	3 59 37.8	8.69	18 4 56.0	0 49 41.70	1.272	4 0 20.6	8.70	
19	0 50 6.18	1.293	4 3 8.1	8.82	19 4 52.5	0 50 12.49	1.294	4 3 51.1	8.83	
20	0 50 37.46	1.315	4 6 41.5	8.95	20 4 49.1	0 50 43.80	1.316	4 7 24.7	8.96	
21	0 51 9.28	1.337	4 10 18.0	9.08	21 4 45.7	0 51 15.65	1.338	4 11 1.3	9.09	
22	0 51 41.62	1.359	4 13 57.5	9.21	22 4 42.3	0 51 48.01	1.360	4 14 40.9	9.21	
23	0 52 14.48	1.380	4 17 40.0	9.33	23 4 39.0	0 52 20.89	1.381	4 18 23.4	9.33	
24	0 52 47.84	1.401	4 21 25.5	9.45	24 4 35.6	0 52 54.28	1.402	4 22 8.9	9.45	
25	0 53 21.72	1.422	4 25 13.8	9.57	25 4 32.2	0 53 28.17	1.423	4 25 57.2	9.57	
26	0 53 56.10	1.443	4 29 5.0	9.69	26 4 28.8	0 54 2.56	1.443	4 29 48.4	9.69	
27	0 54 30.97	1.463	4 32 58.9	9.80	27 4 25.5	0 54 37.44	1.463	4 33 42.2	9.80	
28	0 55 6.32	1.483	4 36 55.5	9.91	28 4 22.1	0 55 12.80	1.483	4 37 38.8	9.91	
29	0 55 42.16	1.503	4 40 54.7	10.02	29 4 18.8	0 55 48.64	1.503	4 41 37.9	10.02	
30	0 56 18.47	1.523	4 44 56.5	10.13	30 4 15.4	0 56 24.95	1.522	4 45 39.6	10.13	
31	0 56 55.24	1.542	4 49 0.9	10.24	31 4 12.1	0 57 1.72	1.541	4 49 43.9	10.23	
Feb. 1	0 57 32.47	1.561	4 53 7.8	10.34	1 4 8.8	0 57 38.94	1.560	4 53 50.7	10.33	
2	0 58 10.15	1.579	4 57 17.1	10.44	2 4 5.5	0 58 16.61	1.578	4 57 59.8	10.43	
3	0 58 48.27	1.597	5 1 28.8	10.54	3 4 2.2	0 58 54.72	1.596	5 2 11.3	10.53	
4	0 59 26.83	1.615	5 5 42.9	10.64	4 3 58.9	0 59 38.26	1.614	5 6 25.2	10.63	
5	1 0 5.82	1.633	5 9 59.2	10.73	5 3 55.6	1 0 12.23	1.632	5 10 41.3	10.72	
6	1 0 45.23	1.650	5 14 17.7	10.82	6 3 52.3	1 0 51.62	1.649	5 14 59.6	10.81	
7	1 1 25.05	1.667	5 18 38.4	10.91	7 3 49.0	1 1 31.42	1.666	5 19 20.1	10.90	
8	1 2 5.28	1.684	5 23 1.2	11.00	8 3 45.8	1 2 11.62	1.683	5 23 42.6	10.99	
9	1 2 45.92	1.701	5 27 26.0	11.08	9 3 42.5	1 2 52.23	1.700	5 28 7.1	11.07	
10	1 3 26.94	1.717	5 31 52.8	11.16	10 3 39.3	1 3 33.22	1.716	5 32 33.6	11.15	
11	1 4 8.35	1.733	5 36 21.6	11.24	11 3 36.0	1 4 14.59	1.732	5 37 2.1	11.23	
12	1 4 50.14	1.749	5 40 52.2	11.32	12 3 32.8	1 4 56.34	1.748	5 41 32.4	11.31	
13	1 5 32.30	1.765	5 45 24.7	11.40	13 3 29.6	1 5 38.46	1.763	5 46 4.5	11.38	
14	1 6 14.83	1.780	5 49 59.0	11.47	14 3 26.4	1 6 20.95	1.778	5 50 38.4	11.45	
15	1 6 57.72	1.795	5 54 35.1	11.54	15 3 23.2	1 7 3.80	1.793	5 55 14.1	11.52	
16	1 7 40.97	1.810	5 59 12.9	11.61	16 3 20.0	1 7 47.00	1.808	5 59 51.6	11.59	
17	1 8 24.56	1.824	6 3 52.3	11.68	17 3 16.8	1 8 30.54	1.822	6 4 30.6	11.66	
18	1 9 8.50	1.838	6 8 33.3	11.75	18 3 13.6	1 9 15.43	1.836	6 9 11.2	11.73	
19	1 9 52.78	1.852	6 13 15.9	11.81	19 3 10.4	1 9 58.66	1.850	6 13 53.4	11.79	
20	1 10 37.40	1.866	6 18 0.0	11.87	20 3 7.2	1 10 43.22	1.864	6 18 37.1	11.85	
21	1 11 22.35	1.880	6 22 45.7	11.93	21 3 4.0	1 11 28.11	1.878	6 23 22.3	11.91	
22	1 12 7.62	1.893	6 27 32.8	11.99	22 3 0.8	1 12 13.32	1.891	6 28 8.9	11.97	
23	1 12 53.21	1.906	6 32 21.3	12.05	23 2 57.6	1 12 58.85	1.904	6 32 57.0	12.03	
24	1 13 39.12	1.919	6 37 11.2	12.11	24 2 54.4	1 13 44.70	1.917	6 37 46.4	12.09	
25	1 14 25.34	1.932	6 42 2.4	12.16	25 2 51.2	1 14 30.86	1.929	6 42 37.1	12.14	
26	1 15 11.86	1.944	6 46 54.9	12.21	26 2 48.1	1 15 17.31	1.941	6 47 29.1	12.19	
27	1 15 58.67	1.956	6 51 48.6	12.26	27 2 44.9	1 16 4.05	1.953	6 52 22.3	12.24	
28	1 16 45.78	1.968	6 56 43.5	12.31	28 2 41.8	1 16 51.09	1.965	6 57 16.7	12.29	
29	1 17 33.17	1.980	7 1 39.1	12.36	29 2 38.6	1 17 38.41	1.977	7 2 12.1	12.33	
30	1 18 20.83	1.991	7 6 36.4	12.40	30 2 35.5	1 18 25.99	1.988	7 7 8.5	12.37	
31	1 19 8.76	+2.002	+7 11 34.4	+12.44	31 2 32.3	1 19 13.85	+1.999	+7 12 6.0	+12.41	

Date.	FOR WASHINGTON MEAN NOON.					FOR MERIDIAN TRANSIT.				
1881.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.	
Mar. 1	17 33.17	+1.980	7 1 39.4	+12.36	1 2 38.6	17 38.41	+1.977	7 2 12.1	+12.33	
2	18 20.83	1.991	7 6 36.4	12.40	2 2 35.5	18 25.99	1.988	7 7 8.5	12.37	
3	19 8.76	2.002	7 11 34.4	12.44	3 2 32.3	19 13.85	1.999	7 12 6.0	12.41	
4	19 56.96	2.013	7 16 33.4	12.48	4 2 29.2	1 20 1.97	2.010	7 17 4.4	12.45	
5	20 45.43	2.024	7 21 33.3	12.52	5 2 26.1	1 30 50.36	2.021	7 22 3.8	12.49	
6	21 34.15	2.035	7 26 34.0	12.55	6 2 23.0	1 21 39.00	2.032	7 27 3.9	12.52	
7	22 23.11	2.045	7 31 35.6	12.58	7 2 19.8	1 22 27.88	2.042	7 32 4.9	12.55	
8	23 12.32	2.055	7 36 37.9	12.61	8 2 16.7	1 23 17.01	2.052	7 37 6.6	12.58	
9	24 1.76	2.065	7 41 41.0	12.64	9 2 13.6	1 24 6.36	2.062	7 42 9.1	12.61	
10	24 51.43	2.075	7 46 44.8	12.67	10 2 10.5	1 24 55.94	2.071	7 47 12.3	12.64	
11	25 41.33	2.084	7 51 49.2	12.70	11 2 7.4	1 25 45.75	2.080	7 52 16.1	12.67	
12	26 31.45	2.093	7 56 54.3	12.72	12 2 4.3	1 26 35.78	2.089	7 57 20.6	12.70	
13	27 21.78	2.102	8 1 59.9	12.74	13 2 1.2	1 27 26.02	2.098	8 2 25.6	12.72	
14	28 12.31	2.111	8 7 6.1	12.76	14 1 58.1	1 28 16.46	2.107	8 7 31.2	12.74	
15	29 3.05	2.119	8 12 12.8	12.78	15 1 55.0	1 29 7.11	2.115	8 12 37.3	12.76	
16	29 54.00	2.127	8 17 19.9	12.80	16 1 51.9	1 29 57.97	2.123	8 17 43.8	12.78	
17	30 45.14	2.135	8 22 27.4	12.82	17 1 48.8	1 30 49.02	2.131	8 22 50.7	12.80	
18	31 36.48	2.143	8 27 35.3	12.84	18 1 45.8	1 31 40.26	2.139	8 27 57.9	12.81	
19	32 28.00	2.151	8 32 43.6	12.85	19 1 42.7	1 32 31.68	2.147	8 33 5.6	12.82	
20	33 19.71	2.159	8 37 52.2	12.86	20 1 39.7	1 33 23.29	2.155	8 38 13.6	12.83	
21	34 11.60	2.166	8 43 1.0	12.87	21 1 36.6	1 34 15.08	2.162	8 43 21.7	12.84	
22	35 3.66	2.173	8 48 10.1	12.88	22 1 33.5	1 35 7.04	2.169	8 48 30.2	12.85	
23	35 55.90	2.180	8 53 19.4	12.89	23 1 30.4	1 35 59.18	2.176	8 53 38.8	12.86	
24	36 48.30	2.187	8 58 28.9	12.90	24 1 27.4	1 36 51.48	2.183	8 58 47.6	12.87	
25	37 40.86	2.194	9 3 38.5	12.90	25 1 24.3	1 37 43.94	2.190	9 3 56.6	12.87	
26	38 33.58	2.200	9 8 48.2	12.91	26 1 21.3	1 38 36.56	2.196	9 9 5.7	12.88	
27	39 26.45	2.206	9 13 58.0	12.91	27 1 18.2	1 39 29.33	2.202	9 14 14.8	12.88	
28	40 19.47	2.212	9 19 7.7	12.91	28 1 15.2	1 40 22.25	2.208	9 19 23.9	12.88	
29	41 12.64	2.218	9 24 17.4	12.91	29 1 12.1	1 41 15.31	2.214	9 24 32.9	12.88	
30	42 5.94	2.224	9 29 27.0	12.90	30 1 9.1	1 42 8.50	2.220	9 29 41.8	12.87	
31	42 59.37	2.229	9 34 36.5	12.90	31 1 6.0	1 43 1.83	2.225	9 34 50.6	12.87	
Apr. 1	43 52.93	2.234	9 39 45.8	12.89	1 1 3.0	1 43 55.28	2.230	9 39 59.3	12.86	
2	44 46.62	2.239	9 44 55.0	12.88	2 1 0.0	1 44 48.86	2.235	9 45 7.8	12.85	
3	45 40.42	2.244	9 50 4.0	12.87	3 0 56.9	1 45 42.55	2.240	9 50 16.2	12.84	
4	46 34.33	2.248	9 55 12.7	12.86	4 0 53.9	1 46 36.35	2.244	9 55 24.3	12.83	
5	47 28.34	2.252	10 0 21.1	12.85	5 0 50.8	1 47 30.25	2.248	10 0 32.0	12.82	
6	48 22.45	2.256	10 5 29.1	12.83	6 0 47.8	1 48 24.25	2.252	10 5 39.3	12.80	
7	49 16.65	2.260	10 10 36.8	12.82	7 0 44.7	1 49 18.33	2.256	10 10 46.3	12.79	
8	50 10.95	2.264	10 15 44.1	12.80	8 0 41.7	1 50 12.52	2.260	10 15 52.9	12.77	
9	51 5.33	2.268	10 20 50.9	12.78	9 0 38.7	1 51 6.79	2.264	10 20 59.1	12.75	
10	51 59.80	2.272	10 25 57.3	12.76	10 0 35.6	1 52 1.15	2.267	10 26 4.9	12.73	
11	52 54.35	2.275	10 31 3.2	12.74	11 0 32.6	1 52 55.58	2.270	10 31 10.2	12.71	
12	53 48.98	2.278	10 36 8.6	12.72	12 0 29.6	1 53 50.10	2.273	10 36 14.9	12.69	
13	54 43.68	2.281	10 41 13.4	12.70	13 0 26.6	1 54 44.69	2.276	10 41 19.0	12.67	
14	55 38.44	2.284	10 46 17.6	12.67	14 0 23.6	1 55 39.34	2.279	10 46 22.5	12.64	
15	56 33.27	2.286	10 51 21.2	12.64	15 0 20.5	1 56 34.05	2.282	10 51 25.5	12.61	
16	57 28.16	2.288	10 56 24.2	12.61	16 0 17.5	1 57 28.83	2.284	10 56 27.8	12.58	
17	58 23.10	2.290	11 1 26.6	12.58	17 0 14.5	1 58 23.66	2.286	11 1 29.6	12.55	
18	59 18.09	2.292	11 6 28.2	12.55	18 0 11.5	1 59 18.54	2.288	11 6 30.6	12.52	
19	2 0 13.14	2.294	11 11 29.1	12.52	19 0 8.5	2 0 13.47	2.290	11 11 30.9	12.49	
20	2 1 8.23	2.296	11 16 29.3	12.49	20 0 5.5	2 1 8.45	2.292	11 16 30.5	12.46	
21	2 2 3.36	2.298	11 21 28.7	12.46	21 0 2.5	2 2 3.47	2.293	11 21 29.3	12.43	
22	2 2 58.53	2.299	11 26 27.3	12.43	22 23 59.4	2 3 53.50	2.296	11 26 27.3	12.40	
23	2 3 53.73	2.300	11 31 25.1	12.39	23 23 53.4	2 4 48.69	2.297	11 36 20.5	12.33	
24	2 4 48.96	2.301	11 36 22.0	12.35	24 23 50.4	2 5 43.82	2.298	11 41 15.9	12.29	
25	2 5 44.21	2.302	11 41 18.0	12.31	25 23 47.4	2 6 38.97	2.299	11 46 10.4	12.25	
26	2 6 39.47	2.303	11 46 13.1	12.27	26 23 44.4	2 7 34.13	2.299	11 51 3.9	12.21	
27	2 7 34.75	2.304	11 51 7.2	12.23	27 23 41.3	2 8 29.30	2.299	11 56 66.4	12.17	
28	2 8 30.04	2.304	11 56 0.3	12.19	28 23 38.3	2 9 24.48	2.299	12 0 47.9	12.13	
29	2 9 25.33	2.304	12 0 52.4	12.15	29 23 35.3	2 10 19.65	2.299	12 5 38.4	12.09	
30	2 10 20.62	2.304	12 5 43.5	12.11	30 23 32.3	2 11 14.82	2.298	12 10 27.8	12.04	
31	2 11 15.90	+2.303	+12 10 33.5	+12.06	31 23 29.3	2 12 9.97	+2.298	+12 15 16.1	+11.99	

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1881.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
May 1	^h 2 ^m 11 ^s 15.90	+2.303	[°] 12 ['] 10 [″] 33.5	+12.06	^d 1 ^h 23 ^m 29.3	^h 2 ^m 12 ^s 9.97	+2.298	[°] 12 ['] 15 [″] 16.1	+11.99
2	2 12 11.17	2.302	12 15 22.4	12.01	2 23 26.3	2 13 5.11	2.297	12 20 3.3	11.94
3	2 13 6.42	2.301	12 20 10.1	11.96	3 23 23.2	2 14 0.22	2.296	12 24 49.3	11.89
4	2 14 1.64	2.300	12 24 56.6	11.91	4 23 20.2	2 14 55.30	2.295	12 29 34.0	11.84
5	2 14 56.84	2.299	12 29 42.0	11.86	5 23 17.2	2 15 50.35	2.294	12 34 17.6	11.79
6	2 15 52.01	2.298	12 34 26.1	11.81	6 23 14.2	2 16 45.37	2.292	12 38 59.9	11.74
7	2 16 47.14	2.296	12 39 9.0	11.76	7 23 11.2	2 17 40.34	2.290	12 43 41.0	11.69
8	2 17 42.23	2.294	12 43 50.6	11.71	8 23 8.1	2 18 35.27	2.288	12 48 20.8	11.64
9	2 18 37.28	2.292	12 48 31.0	11.66	9 23 5.1	2 19 30.16	2.286	12 52 59.3	11.59
10	2 19 32.28	2.290	12 53 10.1	11.60	10 23 2.1	2 20 25.00	2.284	12 57 36.5	11.53
11	2 20 27.23	2.288	12 57 47.8	11.54	11 22 59.1	2 21 19.78	2.281	13 2 12.4	11.47
12	2 21 22.12	2.286	13 2 24.2	11.49	12 22 56.0	2 22 14.50	2.279	13 6 46.9	11.41
13	2 22 15.95	2.284	13 6 59.2	11.43	13 22 53.0	2 23 9.15	2.276	13 11 20.0	11.35
14	2 23 11.72	2.281	13 11 32.8	11.37	14 22 50.0	2 24 3.74	2.273	13 15 51.7	11.29
15	2 24 6.42	2.278	13 16 5.0	11.31	15 22 47.0	2 24 58.26	2.270	13 20 22.0	11.23
16	2 25 1.05	2.275	13 20 35.8	11.25	16 22 43.9	2 25 52.70	2.267	13 24 50.9	11.17
17	2 25 55.61	2.272	13 25 5.2	11.19	17 22 40.9	2 26 47.07	2.264	13 29 18.3	11.11
18	2 26 50.09	2.268	13 29 33.1	11.13	18 22 37.9	2 27 41.36	2.269	13 33 44.3	11.05
19	2 27 44.48	2.264	13 33 59.5	11.06	19 22 34.9	2 28 35.55	2.266	13 38 8.7	10.99
20	2 28 38.78	2.260	13 38 24.4	10.99	20 22 31.8	2 29 29.65	2.262	13 42 31.6	10.92
21	2 29 32.98	2.256	13 42 47.7	10.92	21 22 28.8	2 30 23.64	2.248	13 46 52.9	10.85
22	2 30 27.09	2.252	13 47 9.4	10.86	22 22 25.8	2 31 17.54	2.244	13 51 12.6	10.79
23	2 31 21.09	2.248	13 51 29.6	10.80	23 22 22.8	2 32 11.32	2.239	13 55 30.8	10.73
24	2 32 14.98	2.243	13 55 48.2	10.74	24 22 19.7	2 33 4.99	2.234	13 59 47.3	10.66
25	2 33 8.76	2.238	14 0 5.2	10.67	25 22 16.7	2 33 58.54	2.229	14 4 2.2	10.59
26	2 34 2.42	2.233	14 4 20.5	10.60	26 22 13.7	2 34 51.97	2.224	14 8 15.4	10.52
27	2 34 55.95	2.228	14 8 34.2	10.53	27 22 10.6	2 35 45.27	2.218	14 12 27.0	10.45
28	2 35 49.34	2.222	14 12 46.2	10.46	28 22 7.6	2 36 38.42	2.212	14 16 36.9	10.38
29	2 36 42.60	2.216	14 16 56.4	10.39	29 22 4.5	2 37 31.44	2.206	14 20 45.0	10.31
30	2 37 35.72	2.210	14 21 4.9	10.32	30 22 1.5	2 38 24.31	2.200	14 24 51.4	10.23
31	2 38 28.68	2.204	14 25 11.6	10.24	31 21 58.4	2 39 17.01	2.193	14 28 56.0	10.15
June 1	2 39 21.49	2.197	14 29 16.6	10.17	1 21 55.3	2 40 9.56	2.186	14 32 58.8	10.08
2	2 40 14.14	2.190	14 33 19.8	10.10	2 21 52.2	2 41 1.95	2.179	14 36 59.8	10.00
3	2 41 6.62	2.183	14 37 21.2	10.02	3 21 49.2	2 41 54.16	2.172	14 40 59.0	9.93
4	2 41 58.93	2.176	14 41 20.7	9.94	4 21 46.1	2 42 46.20	2.165	14 44 56.3	9.85
5	2 42 51.06	2.169	14 45 18.4	9.86	5 21 43.0	2 43 38.06	2.157	14 48 51.8	9.77
6	2 43 43.02	2.161	14 49 14.2	9.79	6 21 39.9	2 44 29.74	2.149	14 52 45.4	9.70
7	2 44 34.79	2.153	14 53 8.1	9.71	7 21 36.8	2 45 21.23	2.141	14 56 37.1	9.62
8	2 45 26.36	2.145	14 57 0.2	9.63	8 21 33.8	2 46 12.51	2.133	15 0 27.0	9.54
9	2 46 17.74	2.137	15 0 50.4	9.55	9 21 30.7	2 47 3.60	2.125	15 4 15.0	9.46
10	2 47 8.92	2.128	15 4 38.6	9.47	10 21 27.6	2 47 54.49	2.116	15 8 1.0	9.38
11	2 47 59.89	2.119	15 8 24.9	9.39	11 21 24.5	2 48 45.16	2.107	15 11 45.1	9.30
12	2 48 50.66	2.111	15 12 9.3	9.31	12 21 21.4	2 49 35.63	2.098	15 15 27.3	9.22
13	2 49 41.22	2.102	15 15 51.7	9.23	13 21 18.3	2 50 25.89	2.089	15 19 7.5	9.14
14	2 50 31.56	2.093	15 19 32.1	9.15	14 21 15.2	2 51 15.92	2.080	15 22 45.6	9.06
15	2 51 21.68	2.083	15 23 10.5	9.06	15 21 12.1	2 52 5.73	2.070	15 26 21.8	8.97
16	2 52 11.56	2.073	15 26 47.0	8.98	16 21 9.0	2 52 55.29	2.060	15 29 56.0	8.89
17	2 53 1.20	2.063	15 30 21.4	8.90	17 21 5.9	2 53 44.61	2.050	15 33 28.2	8.80
18	2 53 50.60	2.053	15 33 53.8	8.82	18 21 2.8	2 54 33.69	2.040	15 36 58.3	8.72
19	2 54 39.75	2.043	15 37 24.1	8.73	19 20 59.7	2 55 22.51	2.029	15 40 26.4	8.63
20	2 55 28.65	2.032	15 40 52.4	8.64	20 20 56.6	2 56 11.07	2.018	15 43 52.4	8.54
21	2 56 17.28	2.021	15 44 18.6	8.56	21 20 53.5	2 56 59.36	2.007	15 47 16.3	8.46
22	2 57 5.65	2.010	15 47 42.7	8.46	22 20 50.3	2 57 47.39	1.995	15 50 39.1	8.37
23	2 57 53.74	1.998	15 51 4.7	8.37	23 20 47.2	2 58 35.13	1.983	15 53 57.9	8.28
24	2 58 41.55	1.986	15 54 24.6	8.28	24 20 44.0	2 59 22.59	1.971	15 57 15.5	8.19
25	2 59 29.07	1.974	15 57 42.3	8.19	25 20 40.9	3 0 9.75	1.959	16 0 30.9	8.10
26	3 0 16.29	1.962	16 0 57.9	8.10	26 20 37.7	3 0 56.61	1.946	16 3 44.2	8.01
27	3 1 3.21	1.949	16 4 11.3	8.01	27 20 34.6	3 1 44.16	1.933	16 6 55.3	7.92
28	3 1 49.82	1.936	16 7 22.5	7.92	28 20 31.4	3 2 29.40	1.920	16 10 4.2	7.83
29	3 2 36.10	1.923	16 10 31.5	7.83	29 20 28.3	3 3 15.30	1.907	16 13 10.9	7.74
30	3 3 22.07	1.909	16 13 38.3	7.74	30 20 25.1	3 4 0.89	1.893	16 16 15.4	7.64
31	3 4 7.71	+1.895	+16 16 42.9	+7.65	31 20 21.9	3 4 46.14	+1.879	+16 19 17.7	+7.55

Date.	FOR WASHINGTON MEAN NOON.					FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.	
July 1881.	^h ^m ^s	^s	[°] ['] ["]	["]	^d ^h ^m	^h ^m ^s	^s	[°] ['] ["]	["]	
	3 4 7.71	+1.895	+16 16 42.9	+7.65	1 20 21.9	3 4 46.14	+1.879	+16 19 17.7	+7.55	
	3 4 53.01	1.881	16 19 45.2	7.56	2 20 18.7	3 5 31.05	1.864	16 22 17.7	7.46	
	3 5 37.97	1.866	16 22 45.2	7.46	3 20 15.5	3 6 15.62	1.849	16 25 15.4	7.36	
	3 6 22.58	1.851	16 25 43.0	7.36	4 20 12.3	3 6 59.83	1.834	16 28 10.9	7.27	
	3 7 6.83	1.836	16 28 38.5	7.26	5 20 9.1	3 7 43.68	1.819	16 31 4.1	7.17	
	3 7 50.72	1.821	16 31 31.7	7.17	6 20 5.9	3 8 27.16	1.804	16 33 55.0	7.07	
	3 8 34.24	1.806	16 34 22.7	7.07	7 20 2.7	3 9 10.27	1.788	16 36 43.7	6.98	
	3 9 17.39	1.790	16 37 11.4	6.98	8 19 59.4	3 9 53.01	1.772	16 39 30.1	6.88	
	3 10 0.16	1.774	16 39 57.8	6.89	9 19 56.2	3 10 35.37	1.756	16 42 14.2	6.78	
	3 10 42.54	1.758	16 42 41.9	6.79	10 19 53.0	3 11 18.33	1.740	16 44 56.0	6.69	
	3 11 24.53	1.741	16 45 23.6	6.70	11 19 49.8	3 11 59.90	1.723	16 47 35.4	6.59	
	3 12 6.12	1.724	16 48 3.0	6.60	12 19 46.5	3 12 40.66	1.706	16 50 12.6	6.50	
	3 12 47.30	1.707	16 50 40.1	6.50	13 19 43.3	3 13 20.81	1.689	16 52 47.4	6.40	
	3 13 28.07	1.690	16 53 14.9	6.40	14 19 40.0	3 14 1.14	1.672	16 55 19.9	6.30	
	3 14 8.42	1.672	16 55 47.4	6.30	15 19 36.7	3 14 41.05	1.654	16 57 50.1	6.21	
	3 14 48.35	1.654	16 58 17.5	6.20	16 19 33.4	3 15 20.53	1.636	17 0 18.0	6.11	
	3 15 27.84	1.636	17 0 45.2	6.10	17 19 30.2	3 15 59.57	1.617	17 2 43.5	6.01	
	3 16 6.89	1.617	17 3 10.5	6.00	18 19 26.9	3 16 38.17	1.598	17 5 6.5	5.90	
	3 16 45.49	1.598	17 5 33.3	5.90	19 19 23.6	3 17 16.32	1.579	17 7 27.0	5.80	
	3 17 23.63	1.579	17 7 53.7	5.80	20 19 20.3	3 17 54.00	1.560	17 9 45.1	5.70	
	3 18 1.30	1.559	17 10 11.7	5.70	21 19 17.0	3 18 31.20	1.540	17 12 0.8	5.60	
	3 18 38.49	1.539	17 12 27.3	5.60	22 19 13.7	3 19 7.91	1.520	17 14 14.1	5.50	
	3 19 15.19	1.519	17 14 40.4	5.50	23 19 10.4	3 19 44.13	1.499	17 16 24.9	5.40	
	3 19 51.40	1.498	17 16 51.1	5.40	24 19 7.0	3 20 19.86	1.478	17 18 33.3	5.30	
	3 20 27.11	1.477	17 18 59.3	5.30	25 19 3.7	3 20 55.08	1.457	17 20 39.3	5.20	
	3 21 2.31	1.456	17 21 5.0	5.19	26 19 0.3	3 21 29.79	1.435	17 22 42.8	5.09	
	3 21 36.99	1.434	17 23 8.2	5.09	27 18 56.9	3 22 3.97	1.413	17 24 43.8	4.99	
	3 22 11.15	1.412	17 25 9.0	4.98	28 18 53.5	3 22 37.63	1.391	17 26 42.3	4.88	
	3 22 44.77	1.390	17 27 7.3	4.88	29 18 50.2	3 23 10.75	1.369	17 28 38.3	4.78	
	3 23 17.85	1.367	17 29 3.0	4.77	30 18 46.8	3 23 43.32	1.346	17 30 31.8	4.67	
	3 23 50.38	1.344	17 30 56.2	4.66	31 18 43.4	3 24 15.34	1.323	17 32 24.7	4.57	
Aug. 1881.	3 24 22.35	1.321	17 32 46.9	4.56	1 18 40.0	3 24 46.80	1.299	17 34 11.2	4.47	
	3 24 53.76	1.297	17 34 35.1	4.45	2 18 36.6	3 25 17.60	1.275	17 35 57.2	4.36	
	3 25 24.60	1.273	17 36 20.7	4.35	3 18 33.2	3 25 48.01	1.251	17 37 40.6	4.26	
	3 25 54.97	1.249	17 38 3.8	4.24	4 18 29.7	3 26 17.76	1.227	17 39 21.5	4.15	
	3 26 24.55	1.225	17 39 44.4	4.14	5 18 26.2	3 26 46.92	1.202	17 40 59.9	4.05	
	3 26 53.64	1.200	17 41 22.4	4.03	6 18 22.8	3 27 15.48	1.177	17 42 35.7	3.94	
	3 27 22.13	1.175	17 42 57.9	3.92	7 18 19.3	3 27 43.44	1.152	17 44 9.0	3.84	
	3 27 50.01	1.150	17 44 30.8	3.82	8 18 15.8	3 28 10.79	1.127	17 45 39.7	3.73	
	3 28 17.29	1.124	17 46 1.2	3.71	9 18 12.3	3 28 37.54	1.101	17 47 8.0	3.62	
	3 28 43.95	1.098	17 47 29.0	3.60	10 18 8.8	3 29 3.66	1.075	17 48 33.6	3.51	
	3 29 9.98	1.071	17 48 54.2	3.50	11 18 5.3	3 29 29.15	1.049	17 49 56.6	3.41	
	3 29 35.38	1.044	17 50 16.8	3.39	12 18 1.8	3 29 54.01	1.022	17 51 17.1	3.30	
	3 30 0.13	1.017	17 51 36.8	3.28	13 17 58.3	3 30 18.21	0.995	17 52 35.0	3.19	
	3 30 24.23	0.990	17 52 54.2	3.17	14 17 54.8	3 30 41.76	0.968	17 53 50.2	3.08	
	3 30 47.67	0.962	17 54 9.0	3.06	15 17 51.3	3 31 4.65	0.940	17 55 2.9	2.97	
	3 31 10.44	0.934	17 55 21.2	2.95	16 17 47.7	3 31 26.86	0.912	17 56 13.0	2.86	
	3 31 32.54	0.906	17 56 30.8	2.84	17 17 44.1	3 31 48.40	0.883	17 57 20.5	2.75	
	3 31 53.95	0.878	17 57 37.7	2.73	18 17 40.5	3 32 9.25	0.854	17 58 25.3	2.64	
	3 32 14.67	0.849	17 58 42.0	2.62	19 17 36.9	3 32 29.41	0.825	17 59 27.5	2.53	
	3 32 34.69	0.820	17 59 43.6	2.51	20 17 33.3	3 32 48.86	0.796	18 0 27.0	2.42	
	3 32 54.01	0.790	18 0 42.5	2.40	21 17 29.6	3 33 7.61	0.766	18 1 23.8	2.31	
	3 33 12.61	0.760	18 1 38.7	2.29	22 17 26.0	3 33 25.64	0.736	18 2 17.9	2.20	
	3 33 30.48	0.730	18 2 32.3	2.18	23 17 22.4	3 33 42.94	0.706	18 3 9.4	2.09	
	3 33 47.62	0.699	18 3 23.2	2.07	24 17 18.7	3 33 59.51	0.675	18 3 58.2	1.98	
	3 34 4.02	0.668	18 4 11.4	1.95	25 17 15.0	3 34 15.33	0.644	18 4 44.4	1.87	
	3 34 19.68	0.637	18 4 56.9	1.84	26 17 11.4	3 34 30.42	0.613	18 5 27.8	1.76	
	3 34 34.59	0.606	18 5 39.7	1.73	27 17 7.7	3 34 44.76	0.581	18 6 8.5	1.65	
	3 34 48.74	0.574	18 6 19.7	1.62	28 17 4.0	3 34 58.33	0.549	18 6 46.5	1.54	
	3 35 2.12	0.542	18 6 57.1	1.50	29 17 0.3	3 35 11.13	0.517	18 7 21.1	1.43	
	3 35 14.74	0.510	18 7 31.8	1.39	30 16 56.6	3 35 23.17	0.485	18 7 54.6	1.31	
	3 35 26.59	+0.478	+18 8 3.8	+1.28	31 16 52.8	3 35 34.44	+0.453	+18 8 24.6	+1.20	

Date. 1881.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
Sept. 1	3 35 37.68	+0.446	18 8 33.1	+1.17	1 16 49.0	3 35 44.96	+0.421	18 8 52.0	+1.08
2	3 35 47.98	0.413	18 8 59.6	1.05	2 16 45.2	3 35 54.69	0.389	18 9 16.5	0.97
3	3 35 57.50	0.380	18 9 23.4	0.94	3 16 41.4	3 36 3.64	0.356	18 9 38.4	0.85
4	3 36 6.23	0.347	18 9 44.5	0.82	4 16 37.6	3 36 11.80	0.323	18 9 57.6	0.74
5	3 36 14.16	0.314	18 10 2.9	0.71	5 16 33.8	3 36 19.16	0.290	18 10 14.0	0.63
6	3 36 21.30	0.281	18 10 18.5	0.60	6 16 30.0	3 36 25.73	0.257	18 10 27.7	0.51
7	3 36 27.64	0.248	18 10 31.4	0.48	7 16 26.2	3 36 31.50	0.224	18 10 38.7	0.40
8	3 36 33.18	0.214	18 10 41.6	0.37	8 16 22.4	3 36 36.48	0.191	18 10 47.0	0.28
9	3 36 37.91	0.180	18 10 49.1	0.25	9 16 18.5	3 36 40.65	0.157	18 10 52.6	0.17
10	3 36 41.83	0.146	18 10 53.8	0.14	10 16 14.6	3 36 44.01	0.123	18 10 55.4	+0.06
11	3 36 44.94	0.112	18 10 55.8	+0.02	11 16 10.7	3 36 46.56	0.089	18 10 55.5	-0.05
12	3 36 47.23	0.078	18 10 55.1	-0.09	12 16 6.8	3 36 48.30	0.055	18 10 53.0	0.17
13	3 36 48.70	0.044	18 10 51.6	0.21	13 16 2.9	3 36 49.22	+0.021	18 10 47.7	0.28
14	3 36 49.34	+0.010	18 10 45.3	0.32	14 15 59.0	3 36 49.31	-0.013	18 10 39.6	0.39
15	3 36 49.16	-0.025	18 10 36.3	0.44	15 15 55.1	3 36 48.58	0.047	18 10 28.8	0.50
16	3 36 48.15	0.059	18 10 24.5	0.55	16 15 51.1	3 36 47.03	0.081	18 10 15.2	0.62
17	3 36 46.31	0.094	18 10 10.0	0.66	17 15 47.1	3 36 44.65	0.116	18 9 58.9	0.73
18	3 36 43.64	0.129	18 9 52.7	0.78	18 15 43.1	3 36 41.44	0.151	18 9 39.9	0.85
19	3 36 40.14	0.164	18 9 32.7	0.89	19 15 39.1	3 36 37.41	0.186	18 9 18.2	0.96
20	3 36 35.81	0.199	18 9 10.0	1.00	20 15 35.1	3 36 32.55	0.220	18 8 53.8	1.08
21	3 36 30.64	0.234	18 8 44.5	1.12	21 15 31.1	3 36 26.86	0.255	18 8 26.6	1.19
22	3 36 24.64	0.268	18 8 16.3	1.23	22 15 27.0	3 36 20.35	0.289	18 7 56.7	1.31
23	3 36 17.81	0.302	18 7 45.4	1.35	23 15 23.0	3 36 13.01	0.323	18 7 24.2	1.42
24	3 36 10.16	0.336	18 7 11.8	1.46	24 15 18.9	3 36 4.86	0.357	18 6 49.0	1.53
25	3 36 1.69	0.370	18 6 35.4	1.57	25 15 14.8	3 35 55.90	0.391	18 6 11.0	1.64
26	3 35 52.40	0.404	18 5 56.4	1.69	26 15 10.7	3 35 46.13	0.424	18 5 30.4	1.75
27	3 35 42.30	0.438	18 5 14.7	1.80	27 15 6.6	3 35 35.55	0.457	18 4 47.1	1.86
28	3 35 31.40	0.471	18 4 30.3	1.91	28 15 2.5	3 35 24.18	0.490	18 4 1.2	1.97
29	3 35 19.71	0.504	18 3 43.3	2.02	29 14 58.4	3 35 12.03	0.523	18 3 12.7	2.08
30	3 35 7.22	0.537	18 2 53.6	2.13	30 14 54.2	3 34 59.09	0.555	18 2 21.5	2.19
Oct. 1	3 34 53.94	0.570	18 2 1.3	2.24	1 14 50.0	3 34 45.37	0.587	18 1 27.8	2.30
2	3 34 39.88	0.602	18 1 6.5	2.34	2 14 45.9	3 34 30.88	0.619	18 0 31.6	2.40
3	3 34 25.05	0.634	18 0 9.1	2.45	3 14 41.7	3 34 15.62	0.651	17 59 32.8	2.50
4	3 34 9.46	0.665	17 59 9.2	2.55	4 14 37.5	3 33 59.62	0.682	17 58 31.5	2.60
5	3 33 53.12	0.696	17 58 6.8	2.66	5 14 33.3	3 33 42.88	0.713	17 57 27.8	2.71
6	3 33 36.03	0.727	17 57 1.9	2.76	6 14 29.1	3 33 25.40	0.743	17 56 21.6	2.81
7	3 33 18.21	0.758	17 55 54.5	2.86	7 14 24.9	3 33 7.19	0.773	17 55 12.9	2.91
8	3 32 59.66	0.788	17 54 44.6	2.96	8 14 20.6	3 32 48.27	0.803	17 54 1.8	3.01
9	3 32 40.40	0.817	17 53 32.3	3.06	9 14 16.4	3 32 28.65	0.832	17 52 48.3	3.11
10	3 32 20.43	0.846	17 52 17.7	3.16	10 14 12.1	3 32 8.33	0.861	17 51 32.5	3.21
11	3 31 59.77	0.875	17 51 0.7	3.25	11 14 7.8	3 31 47.33	0.889	17 50 14.4	3.30
12	3 31 38.42	0.903	17 49 41.4	3.35	12 14 3.5	3 31 25.65	0.917	17 48 54.0	3.40
13	3 31 16.41	0.931	17 48 19.8	3.45	13 13 59.2	3 31 3.32	0.944	17 47 31.3	3.49
14	3 30 53.74	0.958	17 46 55.9	3.54	14 13 54.9	3 30 40.34	0.971	17 46 6.4	3.58
15	3 30 30.43	0.985	17 45 29.8	3.63	15 13 50.6	3 30 16.74	0.997	17 44 39.3	3.67
16	3 30 6.48	1.011	17 44 1.5	3.72	16 13 46.2	3 29 52.51	1.022	17 43 10.0	3.76
17	3 29 41.92	1.036	17 42 31.1	3.81	17 13 41.9	3 29 27.68	1.047	17 41 38.7	3.85
18	3 29 16.76	1.060	17 40 58.6	3.90	18 13 37.6	3 29 2.27	1.071	17 40 5.3	3.93
19	3 28 51.02	1.084	17 39 24.1	3.98	19 13 33.2	3 28 36.29	1.094	17 38 30.0	4.01
20	3 28 24.71	1.107	17 37 47.7	4.06	20 13 28.8	3 28 9.75	1.116	17 36 52.9	4.09
21	3 27 57.86	1.130	17 36 9.4	4.14	21 13 24.4	3 27 42.69	1.138	17 35 13.9	4.17
22	3 27 30.49	1.151	17 34 29.2	4.22	22 13 20.0	3 27 15.12	1.159	17 33 33.0	4.24
23	3 27 2.62	1.171	17 32 47.2	4.29	23 13 15.6	3 26 47.07	1.179	17 31 50.3	4.31
24	3 26 34.26	1.191	17 31 3.5	4.36	24 13 11.2	3 26 18.54	1.198	17 30 6.0	4.38
25	3 26 5.44	1.210	17 29 18.1	4.43	25 13 6.8	3 25 49.57	1.216	17 28 20.1	4.45
26	3 25 36.18	1.228	17 27 31.1	4.49	26 13 2.4	3 25 20.17	1.233	17 26 32.6	4.51
27	3 25 6.51	1.245	17 25 42.6	4.55	27 12 58.0	3 24 50.38	1.249	17 24 43.6	4.57
28	3 24 36.44	1.261	17 23 52.6	4.61	28 12 53.5	3 24 20.20	1.265	17 22 53.2	4.63
29	3 24 6.00	1.275	17 22 1.3	4.66	29 12 49.1	3 23 49.67	1.279	17 21 1.5	4.68
30	3 23 35.22	1.289	17 20 8.7	4.71	30 12 44.7	3 23 18.21	1.292	17 19 8.6	4.73
31	3 23 4.12	1.302	17 18 14.8	4.76	31 12 40.3	3 22 47.64	1.304	17 17 14.4	4.78
32	3 22 32.71	-1.314	17 16 19.8	-4.81	32 12 35.8	3 22 16.15	-1.316	17 15 19.2	-4.82

Date. 1881.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
Nov. 1	^h 3 ^m 22 ^s 32.71	-1.314	+17 16 19.8	-4.81	^d 1 ^h 12 ^m 35.8	^h 3 ^m 22 ^s 16.18	-1.316	+17 15 19.2	-4.82
2	3 22 1.03	1.325	17 14 23.8	4.85	2 12 31.4	3 21 44.46	1.327	17 13 23.1	4.86
3	3 21 29.10	1.335	17 12 26.8	4.89	3 12 26.9	3 21 12.51	1.337	17 11 26.0	4.90
4	3 20 56.94	1.344	17 10 28.9	4.92	4 12 22.4	3 20 40.34	1.346	17 9 28.0	4.93
5	3 20 24.57	1.353	17 8 30.2	4.95	5 12 17.9	3 20 7.98	1.353	17 7 29.3	4.96
6	3 19 52.02	1.360	17 6 30.8	4.98	6 12 13.4	3 19 35.45	1.359	17 5 30.0	4.99
7	3 19 19.31	1.366	17 4 30.7	5.01	7 12 9.0	3 19 2.77	1.364	17 3 30.0	5.01
8	3 18 46.46	1.371	17 2 30.1	5.03	8 12 4.5	3 18 29.96	1.368	17 1 29.5	5.03
9	3 18 13.51	1.375	17 0 29.1	5.05	9 12 0.0	3 17 57.07	1.371	16 59 28.7	5.04
10	3 17 40.47	1.378	16 58 27.7	5.07	10 11 55.5	3 17 24.10	1.374	16 57 27.5	5.05
11	3 17 7.38	1.379	16 56 26.0	5.08	11 11 51.0	3 16 51.09	1.375	16 55 26.1	5.06
12	3 16 34.26	1.380	16 54 24.2	5.08	12 11 46.5	3 16 18.07	1.376	16 53 24.6	5.06
13	3 16 1.12	1.380	16 52 22.3	5.08	13 11 42.1	3 15 45.04	1.375	16 51 23.1	5.06
14	3 15 28.00	1.379	16 50 20.4	5.08	14 11 37.6	3 15 12.04	1.373	16 49 21.6	5.05
15	3 14 54.93	1.376	16 48 18.7	5.07	15 11 33.1	3 14 39.10	1.370	16 47 20.4	5.04
16	3 14 21.92	1.373	16 46 17.2	5.06	16 11 28.6	3 14 6.23	1.367	16 45 19.4	5.03
17	3 13 49.01	1.369	16 44 16.1	5.04	17 11 24.2	3 13 33.48	1.362	16 43 18.9	5.01
18	3 13 16.22	1.363	16 42 15.4	5.02	18 11 19.7	3 13 0.86	1.356	16 41 18.8	4.99
19	3 12 43.57	1.356	16 40 15.2	4.99	19 11 15.2	3 12 28.39	1.349	16 39 19.3	4.96
20	3 12 11.10	1.349	16 38 15.7	4.96	20 11 10.7	3 11 56.11	1.341	16 37 20.5	4.93
21	3 11 38.83	1.340	16 36 17.0	4.93	21 11 6.3	3 11 24.04	1.332	16 35 22.6	4.90
22	3 11 6.79	1.330	16 34 19.1	4.89	22 11 1.8	3 10 52.21	1.322	16 33 25.5	4.86
23	3 10 35.01	1.319	16 32 22.2	4.85	23 10 57.3	3 10 20.65	1.311	16 31 29.4	4.82
24	3 10 3.50	1.307	16 30 26.4	4.80	24 10 52.8	3 9 49.37	1.298	16 29 34.5	4.77
25	3 9 32.28	1.294	16 28 31.8	4.75	25 10 48.4	3 9 18.39	1.284	16 27 40.8	4.71
26	3 9 1.39	1.280	16 26 38.4	4.70	26 10 44.0	3 8 47.75	1.269	16 25 48.4	4.65
27	3 8 30.85	1.265	16 24 46.4	4.64	27 10 39.5	3 8 17.47	1.254	16 23 57.4	4.59
28	3 8 0.68	1.249	16 22 55.9	4.58	28 10 35.1	3 7 47.56	1.238	16 22 7.9	4.53
29	3 7 30.91	1.232	16 21 6.9	4.51	29 10 30.7	3 7 18.06	1.221	16 20 19.9	4.46
30	3 7 1.56	1.214	16 19 19.6	4.44	30 10 26.3	3 6 48.98	1.203	16 18 33.7	4.39
Dec. 1	3 6 32.65	1.195	16 17 34.1	4.37	1 10 21.9	3 6 20.35	1.183	16 16 49.2	4.31
2	3 6 4.21	1.175	16 15 50.5	4.29	2 10 17.5	3 5 52.20	1.163	16 15 6.8	4.23
3	3 5 36.24	1.155	16 14 8.9	4.21	3 10 13.1	3 5 24.52	1.142	16 13 26.4	4.15
4	3 5 8.76	1.134	16 12 29.2	4.12	4 10 8.7	3 4 57.34	1.121	16 11 48.0	4.06
5	3 4 41.79	1.113	16 10 51.7	4.03	5 10 4.3	3 4 30.67	1.099	16 10 11.7	3.97
6	3 4 15.35	1.090	16 9 16.3	3.94	6 9 59.9	3 4 4.53	1.077	16 8 37.5	3.88
7	3 3 49.46	1.067	16 7 43.2	3.84	7 9 55.6	3 3 38.95	1.054	16 7 5.6	3.78
8	3 3 24.13	1.043	16 6 12.5	3.74	8 9 51.2	3 3 13.93	1.030	16 5 36.1	3.68
9	3 2 59.39	1.018	16 4 44.2	3.63	9 9 46.8	3 2 49.51	1.005	16 4 9.1	3.57
10	3 2 35.25	0.993	16 3 18.4	3.52	10 9 42.5	3 2 25.60	0.980	16 2 44.6	3.46
11	3 2 11.72	0.967	16 1 55.2	3.41	11 9 38.2	3 2 2.48	0.954	16 1 22.7	3.35
12	3 1 48.81	0.941	16 0 34.6	3.30	12 9 33.9	3 1 39.89	0.928	16 0 3.5	3.24
13	3 1 26.55	0.914	15 59 16.8	3.18	13 9 29.6	3 1 17.96	0.901	15 58 47.0	3.12
14	3 1 4.95	0.886	15 58 1.8	3.06	14 9 25.3	3 0 56.68	0.873	15 57 33.3	3.00
15	3 0 44.02	0.858	15 56 49.6	2.94	15 9 21.1	3 0 36.08	0.844	15 56 22.4	2.88
16	3 0 23.78	0.829	15 55 40.4	2.82	16 9 16.8	3 0 16.16	0.815	15 55 14.5	2.76
17	3 0 4.24	0.799	15 54 34.2	2.70	17 9 12.6	2 59 56.95	0.785	15 54 9.6	2.64
18	2 59 45.42	0.769	15 53 31.0	2.57	18 9 8.4	2 59 38.46	0.755	15 53 7.8	2.51
19	2 59 27.32	0.739	15 52 30.9	2.44	19 9 4.2	2 59 20.69	0.725	15 52 9.1	2.38
20	2 59 9.96	0.708	15 51 34.0	2.31	20 9 0.0	2 59 3.66	0.694	15 51 13.5	2.25
21	2 58 53.35	0.677	15 50 40.3	2.17	21 8 55.8	2 58 47.38	0.663	15 50 21.1	2.11
22	2 58 37.49	0.645	15 49 49.9	2.03	22 8 51.6	2 58 31.85	0.631	15 49 32.1	1.97
23	2 58 22.40	0.613	15 49 2.8	1.89	23 8 47.4	2 58 17.08	0.599	15 48 46.4	1.83
24	2 58 8.09	0.580	15 48 19.0	1.75	24 8 43.2	2 58 3.09	0.566	15 48 4.0	1.69
25	2 57 54.56	0.547	15 47 38.6	1.61	25 8 39.0	2 57 49.89	0.533	15 47 25.0	1.55
26	2 57 41.83	0.514	15 47 1.6	1.47	26 8 34.9	2 57 37.48	0.500	15 46 49.3	1.41
27	2 57 29.89	0.481	15 46 28.1	1.33	27 8 30.8	2 57 25.86	0.467	15 46 17.1	1.27
28	2 57 18.75	0.448	15 45 58.0	1.19	28 8 26.7	2 57 15.04	0.434	15 45 48.3	1.13
29	2 57 8.42	0.414	15 45 31.4	1.04	29 8 22.6	2 57 5.02	0.400	15 44 23.0	0.98
30	2 56 58.90	0.380	15 45 8.3	0.89	30 8 18.5	2 56 55.81	0.367	15 44 1.2	0.83
31	2 56 50.19	-0.346	+15 44 48.8	-0.74	31 8 14.4	2 56 47.40	-0.333	+15 43 42.9	-0.68

Date. 1881.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
Jan. 1	^h 1 ^m 25 ^s 48.71	+0.125	[°] +6 ['] 17 ["] 4.7	+1.51	^d 1 ^h 6 ^m 38.8	^h 1 ^m 25 ^s 49.55	+0.129	[°] +6 ['] 17 ["] 14.8	+1.53
2	1 25 51.91	0.142	6 17 42.3	1.62	2 6 34.9	1 25 52.86	0.146	6 17 53.0	1.64
3	1 25 55.52	0.150	6 18 22.4	1.72	3 6 31.0	1 25 56.57	0.163	6 18 33.6	1.74
4	1 25 59.54	0.176	6 19 4.9	1.82	4 6 27.2	1 26 0.69	0.180	6 19 16.7	1.84
5	1 26 3.98	0.194	6 19 49.8	1.92	5 6 23.3	1 26 5.23	0.197	6 20 2.1	1.94
6	1 26 8.83	0.211	6 20 37.2	2.02	6 6 19.5	1 26 10.17	0.214	6 20 50.0	2.04
7	1 26 14.09	0.228	6 21 26.9	2.12	7 6 15.6	1 26 15.52	0.232	6 21 40.2	2.14
8	1 26 19.76	0.245	6 22 19.0	2.22	8 6 11.8	1 26 21.28	0.248	6 22 32.8	2.24
9	1 26 25.83	0.261	6 23 13.4	2.32	9 6 8.0	1 26 27.44	0.265	6 23 27.7	2.34
10	1 26 32.30	0.278	6 24 10.2	2.41	10 6 4.1	1 26 34.00	0.282	6 24 24.9	2.43
11	1 26 39.18	0.295	6 25 9.3	2.51	11 6 0.3	1 26 40.96	0.298	6 25 24.4	2.53
12	1 26 46.46	0.311	6 26 10.7	2.61	12 5 56.5	1 26 48.32	0.315	6 26 26.2	2.62
13	1 26 54.13	0.328	6 27 14.4	2.70	13 5 52.7	1 26 56.07	0.331	6 27 30.3	2.71
14	1 27 2.19	0.344	6 28 20.4	2.80	14 5 48.9	1 27 4.21	0.347	6 28 36.7	2.81
15	1 27 10.65	0.361	6 29 28.6	2.89	15 5 45.1	1 27 12.74	0.364	6 29 45.2	2.90
16	1 27 19.50	0.377	6 30 39.0	2.98	16 5 41.3	1 27 21.66	0.379	6 30 56.0	2.99
17	1 27 28.73	0.393	6 31 51.6	3.07	17 5 37.6	1 27 30.95	0.395	6 32 8.9	3.08
18	1 27 38.35	0.409	6 33 6.4	3.16	18 5 33.8	1 27 40.64	0.412	6 33 24.0	3.17
19	1 27 48.36	0.425	6 34 23.3	3.25	19 5 30.0	1 27 50.71	0.427	6 34 41.2	3.26
20	1 27 58.75	0.441	6 35 42.4	3.34	20 5 26.3	1 28 1.16	0.443	6 36 0.6	3.35
21	1 28 9.51	0.456	6 37 3.6	3.43	21 5 22.5	1 28 11.97	0.458	6 37 22.1	3.44
22	1 28 20.64	0.472	6 38 26.9	3.51	22 5 18.8	1 28 23.16	0.474	6 38 45.7	3.52
23	1 28 32.15	0.487	6 39 52.3	3.60	23 5 15.0	1 28 34.72	0.489	6 40 11.3	3.61
24	1 28 44.03	0.503	6 41 19.8	3.69	24 5 11.3	1 28 46.65	0.505	6 41 39.0	3.70
25	1 28 56.28	0.518	6 42 49.3	3.77	25 5 7.6	1 28 58.94	0.520	6 43 8.7	3.78
26	1 29 8.90	0.533	6 44 20.8	3.85	26 5 3.8	1 29 11.61	0.535	6 44 40.4	3.86
27	1 29 21.88	0.548	6 45 54.3	3.94	27 5 0.1	1 29 24.63	0.550	6 46 14.0	3.95
28	1 29 35.22	0.563	6 47 29.8	4.02	28 4 56.4	1 29 38.01	0.565	6 47 49.7	4.03
29	1 29 48.92	0.578	6 49 7.2	4.10	29 4 52.7	1 29 51.75	0.580	6 49 27.2	4.11
30	1 30 2.97	0.593	6 50 46.5	4.17	30 4 49.0	1 30 5.83	0.594	6 51 6.7	4.18
31	1 30 17.37	0.607	6 52 27.6	4.25	31 4 45.3	1 30 20.26	0.608	6 52 47.9	4.26
Feb. 1	1 30 32.12	0.622	6 54 10.6	4.33	1 4 41.6	1 30 35.04	0.623	6 54 31.0	4.34
2	1 30 47.21	0.636	6 55 55.5	4.41	2 4 38.0	1 30 50.16	0.637	6 56 16.0	4.42
3	1 31 2.64	0.650	6 57 42.2	4.48	3 4 34.3	1 31 5.62	0.651	6 58 2.7	4.49
4	1 31 18.40	0.664	6 59 30.6	4.55	4 4 30.6	1 31 21.40	0.665	6 59 51.2	4.56
5	1 31 34.49	0.677	7 1 20.8	4.62	5 4 26.9	1 31 37.51	0.678	7 1 41.4	4.62
6	1 31 50.91	0.691	7 3 12.6	4.69	6 4 23.3	1 31 53.95	0.692	7 3 33.2	4.69
7	1 32 7.65	0.704	7 5 6.1	4.76	7 4 19.6	1 32 10.70	0.705	7 5 26.8	4.76
8	1 32 24.71	0.717	7 7 1.2	4.83	8 4 16.0	1 32 27.77	0.718	7 7 21.9	4.83
9	1 32 42.08	0.730	7 8 57.9	4.90	9 4 12.4	1 32 45.15	0.731	7 9 18.5	4.90
10	1 32 59.76	0.743	7 10 56.3	4.96	10 4 8.7	1 33 2.84	0.744	7 11 16.9	4.96
11	1 33 17.75	0.756	7 12 56.2	5.03	11 4 5.1	1 33 20.84	0.757	7 13 16.8	5.03
12	1 33 36.04	0.768	7 14 57.7	5.09	12 4 1.5	1 33 39.14	0.769	7 15 18.2	5.09
13	1 33 54.63	0.781	7 17 0.6	5.15	13 3 57.8	1 33 57.74	0.781	7 17 21.1	5.15
14	1 34 13.51	0.793	7 19 5.0	5.21	14 3 54.2	1 34 16.61	0.793	7 19 25.4	5.21
15	1 34 32.68	0.805	7 21 10.8	5.27	15 3 50.6	1 34 35.78	0.805	7 21 31.1	5.27
16	1 34 52.13	0.816	7 23 18.0	5.33	16 3 47.0	1 34 55.23	0.816	7 23 38.2	5.33
17	1 35 11.87	0.828	7 25 26.6	5.39	17 3 43.4	1 35 14.96	0.828	7 25 46.6	5.38
18	1 35 31.89	0.840	7 27 36.6	5.44	18 3 39.8	1 35 34.98	0.840	7 27 56.5	5.43
19	1 35 52.19	0.851	7 29 47.9	5.50	19 3 36.2	1 35 55.27	0.851	7 30 7.7	5.49
20	1 36 12.75	0.862	7 32 0.5	5.55	20 3 32.6	1 36 15.82	0.862	7 32 20.1	5.54
21	1 36 33.58	0.874	7 34 14.4	5.61	21 3 29.0	1 36 36.63	0.873	7 34 33.9	5.60
22	1 36 54.68	0.885	7 36 29.6	5.66	22 3 25.4	1 36 57.71	0.884	7 36 49.0	5.65
23	1 37 16.04	0.895	7 38 46.0	5.71	23 3 21.9	1 37 19.05	0.894	7 39 5.2	5.70
24	1 37 37.66	0.906	7 41 3.6	5.76	24 3 18.3	1 37 40.65	0.905	7 41 22.6	5.75
25	1 37 59.53	0.916	7 43 22.3	5.80	25 3 14.7	1 38 2.50	0.915	7 43 41.1	5.79
26	1 38 21.65	0.927	7 45 42.2	5.85	26 3 11.2	1 38 24.60	0.926	7 46 0.8	5.84
27	1 38 44.01	0.937	7 48 3.2	5.90	27 3 7.6	1 38 46.98	0.936	7 48 21.6	5.89
28	1 39 6.61	0.947	7 50 25.2	5.94	28 3 4.0	1 39 9.51	0.946	7 50 43.4	5.93
29	1 39 29.45	0.956	7 52 48.3	5.98	29 3 0.5	1 39 32.33	0.955	7 53 6.2	5.97
30	1 39 52.52	0.966	7 55 12.3	6.02	30 2 56.9	1 39 55.37	0.965	7 55 30.0	6.01
31	1 40 15.81	+0.975	+7 57 37.3	+6.06	31 2 53.4	1 40 18.63	+0.974	+7 57 54.8	+6.05

Date.	FOR WASHINGTON MEAN NOON.					FOR MERIDIAN TRANSIT.				
1881.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.	
Mar. 1	h m s 1 39 29.45	+0.956	7 52 48.3	+5.98	d h m 1 3 0.5	h m s 1 39 32.33	+0.955	7 53 6.2	+5.97	
2	1 39 52.52	0.966	7 55 12.3	6.02	2 2 56.9	1 39 55.37	0.965	7 55 30.0	6.01	
3	1 40 15.81	0.975	7 57 37.3	6.06	3 2 53.4	1 40 18.63	0.974	7 57 54.8	6.05	
4	1 40 39.33	0.984	8 0 3.3	6.10	4 2 49.8	1 40 42.12	0.983	8 0 20.5	6.09	
5	1 41 3.06	0.993	8 2 30.2	6.14	5 2 46.3	1 41 5.82	0.991	8 2 47.2	6.13	
6	1 41 27.01	1.002	8 4 57.9	6.17	6 2 42.8	1 41 29.73	1.000	8 5 14.6	6.16	
7	1 41 51.16	1.011	8 7 26.5	6.21	7 2 39.2	1 41 53.84	1.009	8 7 42.9	6.20	
8	1 42 15.52	1.019	8 9 55.9	6.24	8 2 35.7	1 42 18.16	1.017	8 10 12.1	6.23	
9	1 42 40.07	1.027	8 12 26.1	6.27	9 2 32.2	1 42 42.67	1.025	8 12 42.0	6.26	
10	1 43 4.82	1.035	8 14 57.1	6.31	10 2 28.7	1 43 7.38	1.033	8 15 12.7	6.30	
11	1 43 29.75	1.043	8 17 28.8	6.33	11 2 25.2	1 43 32.27	1.041	8 17 44.1	6.32	
12	1 43 54.87	1.050	8 20 1.2	6.36	12 2 21.6	1 43 57.35	1.048	8 20 16.2	6.35	
13	1 44 20.17	1.058	8 22 34.3	6.39	13 2 18.1	1 44 22.60	1.056	8 22 49.0	6.38	
14	1 44 45.65	1.065	8 25 8.0	6.42	14 2 14.6	1 44 48.04	1.063	8 25 22.4	6.41	
15	1 45 11.30	1.072	8 27 42.4	6.44	15 2 11.1	1 45 13.64	1.070	8 27 56.5	6.43	
16	1 45 37.12	1.079	8 30 17.3	6.46	16 2 7.6	1 45 39.42	1.077	8 30 31.1	6.45	
17	1 46 3.11	1.086	8 32 52.8	6.49	17 2 4.1	1 46 5.36	1.084	8 33 6.2	6.48	
18	1 46 29.26	1.093	8 35 28.8	6.51	18 2 0.6	1 46 31.46	1.091	8 35 41.9	6.50	
19	1 46 55.57	1.099	8 38 5.3	6.53	19 1 57.1	1 46 57.72	1.097	8 38 18.1	6.52	
20	1 47 22.03	1.106	8 40 42.3	6.55	20 1 53.6	1 47 24.13	1.104	8 40 54.7	6.54	
21	1 47 48.64	1.112	8 43 19.8	6.57	21 1 50.1	1 47 50.68	1.110	8 43 31.9	6.56	
22	1 48 15.39	1.118	8 45 57.7	6.59	22 1 46.6	1 48 17.38	1.116	8 46 9.4	6.58	
23	1 48 42.29	1.123	8 48 36.0	6.60	23 1 43.2	1 48 44.22	1.121	8 48 47.4	6.59	
24	1 49 9.32	1.129	8 51 14.7	6.62	24 1 39.7	1 49 11.20	1.127	8 51 25.7	6.61	
25	1 49 36.49	1.135	8 53 53.8	6.63	25 1 36.2	1 49 38.31	1.133	8 54 4.5	6.62	
26	1 50 3.78	1.140	8 56 33.2	6.65	26 1 32.7	1 50 5.54	1.138	8 56 43.5	6.64	
27	1 50 31.20	1.145	8 59 12.9	6.66	27 1 29.2	1 50 32.90	1.142	8 59 22.8	6.65	
28	1 50 58.74	1.150	9 1 52.8	6.67	28 1 25.8	1 51 0.38	1.147	9 2 2.3	6.66	
29	1 51 26.40	1.155	9 4 33.0	6.68	29 1 22.3	1 51 27.98	1.152	9 4 42.2	6.67	
30	1 51 54.17	1.159	9 7 13.4	6.69	30 1 18.8	1 51 55.69	1.156	9 7 22.2	6.68	
31	1 52 22.05	1.164	9 9 54.0	6.69	31 1 15.4	1 52 23.51	1.161	9 10 2.4	6.68	
Apr. 1	1 52 50.03	1.168	9 12 34.7	6.70	1 1 11.9	1 52 51.43	1.165	9 12 42.8	6.68	
2	1 53 18.11	1.172	9 15 15.5	6.70	2 1 8.4	1 53 19.44	1.169	9 15 23.2	6.69	
3	1 53 46.29	1.176	9 17 56.5	6.71	3 1 4.9	1 53 47.56	1.173	9 18 3.8	6.69	
4	1 54 14.55	1.179	9 20 37.5	6.71	4 1 1.5	1 54 15.76	1.176	9 20 44.4	6.69	
5	1 54 42.89	1.182	9 23 18.6	6.71	5 0 58.0	1 54 44.03	1.179	9 23 25.1	6.69	
6	1 55 11.31	1.186	9 25 59.7	6.71	6 0 54.6	1 55 12.39	1.183	9 26 5.8	6.69	
7	1 55 39.81	1.189	9 28 40.7	6.71	7 0 51.1	1 55 40.82	1.186	9 28 46.4	6.69	
8	1 56 8.34	1.192	9 31 21.7	6.71	8 0 47.7	1 56 9.33	1.189	9 31 27.0	6.69	
9	1 56 37.01	1.195	9 34 2.7	6.71	9 0 44.2	1 56 37.89	1.192	9 34 7.6	6.69	
10	1 57 5.71	1.197	9 36 43.6	6.70	10 0 40.7	1 57 6.53	1.194	9 36 48.2	6.69	
11	1 57 34.47	1.200	9 39 24.3	6.70	11 0 37.3	1 57 35.22	1.197	9 39 28.5	6.68	
12	1 58 3.29	1.202	9 42 5.0	6.69	12 0 33.8	1 58 3.97	1.199	9 42 8.8	6.68	
13	1 58 32.15	1.204	9 44 45.5	6.68	13 0 30.4	1 58 32.76	1.201	9 44 48.9	6.67	
14	1 59 1.06	1.205	9 47 25.8	6.67	14 0 26.9	1 59 1.60	1.202	9 47 28.8	6.66	
15	1 59 30.01	1.207	9 50 5.9	6.67	15 0 23.5	1 59 30.48	1.204	9 50 8.5	6.65	
16	1 59 59.00	1.209	9 52 45.8	6.66	16 0 20.0	1 59 59.40	1.206	9 52 48.0	6.64	
17	2 0 28.03	1.210	9 55 25.4	6.65	17 0 16.6	2 0 28.37	1.207	9 55 27.3	6.63	
18	2 0 57.10	1.212	9 58 4.8	6.63	18 0 13.1	2 0 57.37	1.209	9 58 6.3	6.61	
19	2 1 26.19	1.213	10 0 43.9	6.62	19 0 9.7	2 1 26.39	1.210	10 0 45.0	6.60	
20	2 1 55.31	1.214	10 3 22.7	6.61	20 0 6.2	2 1 55.44	1.211	10 3 23.4	6.59	
21	2 2 24.45	1.215	10 6 1.2	6.60	21 0 2.8	2 2 24.51	1.212	10 6 1.5	6.58	
22	2 2 53.61	1.215	10 8 39.3	6.58	22 23 50.3	2 2 53.60	1.212	10 8 39.3	6.56	
23	2 3 22.78	1.216	10 11 17.0	6.56	23 23 55.9	2 3 22.70	1.213	10 11 16.6	6.55	
24	2 3 51.96	1.216	10 13 54.4	6.55	24 23 52.4	2 3 51.81	1.213	10 13 53.6	6.53	
25	2 4 21.14	1.216	10 16 31.3	6.53	25 23 49.0	2 4 20.92	1.213	10 16 30.1	6.51	
26	2 4 50.32	1.216	10 19 7.7	6.51	26 23 45.5	2 4 50.03	1.213	10 19 6.1	6.49	
27	2 5 19.50	1.216	10 21 43.7	6.49	27 23 42.1	2 5 19.14	1.213	10 21 41.8	6.47	
28	2 5 48.67	1.215	10 24 19.2	6.47	28 23 38.6	2 5 48.24	1.212	10 24 16.9	6.45	
29	2 6 17.83	1.215	10 26 54.1	6.44	29 23 35.2	2 6 17.33	1.212	10 26 51.4	6.43	
30	2 6 46.97	1.214	10 29 28.5	6.42	30 23 31.7	2 6 46.40	1.211	10 29 25.4	6.41	
31	2 7 16.08	+1.212	+10 32 2.4	+6.40	31 23 28.3	2 7 15.44	1.210	10 31 59.0	6.39	
					31 23 24.8	2 7 44.46	+1.209	+10 34 31.9	+6.36	

Date. 1881.	FOR WASHINGTON MEAN NOON.					FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.	
May 1	2 7 16.08	+1.212	10 32 2.4	+6.40	1 23 24.8	2 7 44.46	+1.209	10 34 31.9	+6.36	
2	2 7 45.17	1.211	10 34 35.7	6.37	2 23 21.4	2 8 13.44	1.208	10 37 4.2	6.34	
3	2 8 14.22	1.210	10 37 8.3	6.35	3 23 17.9	2 8 42.39	1.206	10 39 35.8	6.31	
4	2 8 43.24	1.208	10 39 40.3	6.32	4 23 14.5	2 9 11.31	1.203	10 42 6.9	6.28	
5	2 9 12.22	1.206	10 42 11.7	6.29	5 23 11.0	2 9 40.17	1.201	10 44 37.3	6.25	
6	2 9 41.15	1.204	10 44 42.4	6.26	6 23 7.6	2 10 8.98	1.199	10 47 6.9	6.22	
7	2 10 10.03	1.202	10 47 12.3	6.23	7 23 4.1	2 10 37.74	1.197	10 49 35.7	6.19	
8	2 10 38.86	1.200	10 49 41.5	6.20	8 23 0.7	2 11 6.46	1.195	10 52 3.9	6.16	
9	2 11 7.64	1.198	10 52 10.0	6.17	9 22 57.2	2 11 35.10	1.192	10 54 31.4	6.13	
10	2 11 36.35	1.195	10 54 37.8	6.14	10 22 53.8	2 12 3.69	1.189	10 56 58.1	6.10	
11	2 12 5.00	1.192	10 57 4.8	6.11	11 22 50.3	2 12 32.21	1.187	10 59 24.0	6.06	
12	2 12 33.59	1.190	10 59 31.1	6.08	12 22 46.8	2 13 0.66	1.184	11 1 49.1	6.03	
13	2 13 2.11	1.187	11 1 56.5	6.04	13 22 43.4	2 13 29.04	1.180	11 4 13.4	5.99	
14	2 13 30.55	1.183	11 4 21.1	6.01	14 22 39.9	2 13 57.34	1.177	11 6 36.8	5.96	
15	2 13 58.91	1.180	11 6 44.8	5.97	15 22 36.5	2 14 25.56	1.174	11 8 59.4	5.92	
16	2 14 27.19	1.177	11 9 7.7	5.93	16 22 33.0	2 14 53.69	1.170	11 11 21.2	5.89	
17	2 14 55.39	1.173	11 11 29.7	5.90	17 22 29.5	2 15 21.74	1.166	11 13 42.0	5.85	
18	2 15 23.50	1.169	11 13 50.8	5.86	18 22 26.1	2 15 49.69	1.162	11 16 1.9	5.81	
19	2 15 51.51	1.165	11 16 11.0	5.82	19 22 22.6	2 16 17.54	1.158	11 18 20.9	5.77	
20	2 16 19.42	1.161	11 18 30.2	5.78	20 22 19.1	2 16 45.29	1.154	11 20 38.9	5.73	
21	2 16 47.23	1.157	11 20 48.5	5.74	21 22 15.7	2 17 12.94	1.150	11 22 55.9	5.69	
22	2 17 14.94	1.152	11 23 5.8	5.70	22 22 12.2	2 17 40.48	1.145	11 25 12.1	5.65	
23	2 17 42.54	1.147	11 25 22.2	5.66	23 22 8.7	2 18 7.90	1.140	11 27 27.1	5.61	
24	2 18 10.02	1.142	11 27 37.5	5.62	24 22 5.2	2 18 35.21	1.135	11 29 41.1	5.56	
25	2 18 37.38	1.137	11 29 51.8	5.57	25 22 1.7	2 19 2.38	1.130	11 31 54.2	5.52	
26	2 19 4.61	1.132	11 32 5.1	5.53	26 21 58.3	2 19 29.43	1.125	11 34 6.2	5.48	
27	2 19 31.72	1.127	11 34 17.3	5.49	27 21 54.8	2 19 56.35	1.119	11 36 17.0	5.43	
28	2 19 58.69	1.121	11 36 28.4	5.44	28 21 51.3	2 20 23.14	1.113	11 38 26.8	5.38	
29	2 20 25.53	1.115	11 38 38.4	5.39	29 21 47.8	2 20 49.79	1.107	11 40 35.4	5.33	
30	2 20 52.23	1.109	11 40 47.2	5.34	30 21 44.3	2 21 16.29	1.101	11 42 42.9	5.29	
31	2 21 18.78	1.103	11 42 54.9	5.30	31 21 40.8	2 21 42.64	1.095	11 44 49.2	5.24	
June 1	2 21 45.18	1.097	11 45 1.4	5.25	1 21 37.3	2 22 8.84	1.088	11 46 54.5	5.19	
2	2 22 11.42	1.090	11 47 6.8	5.20	2 21 33.8	2 22 34.87	1.081	11 48 58.5	5.14	
3	2 22 37.50	1.083	11 49 11.0	5.15	3 21 30.3	2 23 0.74	1.074	11 51 1.2	5.09	
4	2 23 3.42	1.076	11 51 13.9	5.10	4 21 26.8	2 23 26.44	1.067	11 53 2.8	5.05	
5	2 23 29.17	1.069	11 53 15.7	5.05	5 21 23.3	2 23 51.98	1.060	11 55 3.1	5.00	
6	2 23 54.75	1.062	11 55 16.2	5.00	6 21 19.8	2 24 17.33	1.053	11 57 2.3	4.94	
7	2 24 20.15	1.055	11 57 15.5	4.94	7 21 16.3	2 24 42.52	1.045	11 59 0.2	4.89	
8	2 24 45.38	1.047	11 59 13.5	4.89	8 21 12.8	2 25 7.53	1.038	12 0 56.7	4.83	
9	2 25 10.43	1.040	12 1 10.2	4.83	9 21 9.2	2 25 32.35	1.030	12 2 52.0	4.78	
10	2 25 35.29	1.032	12 3 5.6	4.78	10 21 5.7	2 25 56.98	1.022	12 4 46.0	4.73	
11	2 25 59.96	1.024	12 4 59.7	4.73	11 21 2.2	2 26 21.42	1.014	12 6 38.7	4.67	
12	2 26 24.43	1.016	12 6 52.5	4.67	12 20 58.7	2 26 45.66	1.006	12 8 30.0	4.61	
13	2 26 48.71	1.007	12 8 43.9	4.61	13 20 55.1	2 27 9.71	0.998	12 10 20.0	4.55	
14	2 27 12.79	0.999	12 10 34.0	4.56	14 20 51.6	2 27 33.55	0.989	12 12 8.6	4.49	
15	2 27 36.66	0.990	12 12 22.7	4.50	15 20 48.1	2 27 57.19	0.981	12 13 55.9	4.44	
16	2 28 0.33	0.982	12 14 10.1	4.45	16 20 44.5	2 28 20.61	0.971	12 15 41.8	4.38	
17	2 28 23.78	0.972	12 15 56.1	4.39	17 20 41.0	2 28 43.82	0.962	12 17 26.2	4.32	
18	2 28 47.01	0.964	12 17 40.6	4.33	18 20 37.4	2 29 6.81	0.953	12 19 9.4	4.26	
19	2 29 10.03	0.954	12 19 23.8	4.27	19 20 33.9	2 29 29.58	0.944	12 20 51.1	4.20	
20	2 29 32.82	0.945	12 21 5.5	4.21	20 20 30.3	2 29 52.11	0.934	12 22 31.3	4.14	
21	2 29 55.38	0.935	12 22 45.7	4.15	21 20 26.8	2 30 14.41	0.924	12 24 10.0	4.08	
22	2 30 17.70	0.925	12 24 24.5	4.09	22 20 23.2	2 30 36.47	0.914	12 25 47.3	4.02	
23	2 30 39.78	0.915	12 26 1.8	4.02	23 20 19.6	2 30 58.29	0.904	12 27 23.1	3.96	
24	2 31 1.62	0.905	12 27 37.6	3.96	24 20 16.0	2 31 19.87	0.893	12 28 57.4	3.90	
25	2 31 23.21	0.894	12 29 11.9	3.90	25 20 12.5	2 31 41.18	0.883	12 30 30.1	3.83	
26	2 31 44.54	0.884	12 30 44.6	3.83	26 20 8.9	2 32 2.25	0.872	12 32 1.3	3.77	
27	2 32 5.62	0.873	12 32 15.8	3.77	27 20 5.3	2 32 23.06	0.862	12 33 31.0	3.70	
28	2 32 26.44	0.862	12 33 45.4	3.70	28 20 1.7	2 32 43.61	0.851	12 34 59.0	3.63	
29	2 32 46.99	0.851	12 35 13.4	3.63	29 19 58.1	2 33 3.88	0.839	12 36 25.5	3.57	
30	2 33 7.27	0.839	12 36 39.9	3.57	30 19 54.5	2 33 23.89	0.828	12 37 50.5	3.51	
31	2 33 27.28	+0.828	+12 38 4.8	+3.50	31 19 50.9	2 33 43.62	+0.816	+12 39 13.8	+3.44	

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	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
July 1	2 33 27.28	+0.829	12 36 4.8	+3.50	1 19 50.9	2 33 43.62	+0.816	12 39 13.8	+3.44
2	2 33 47.01	0.816	12 39 28.1	3.44	2 19 47.3	2 34 3.07	0.804	12 40 35.6	3.38
3	2 34 6.46	0.804	12 40 49.8	3.37	3 19 43.7	2 34 22.24	0.792	12 41 55.7	3.31
4	2 34 25.62	0.792	12 42 9.8	3.30	4 19 40.1	2 34 41.12	0.780	12 43 14.2	3.24
5	2 34 44.50	0.780	12 43 28.2	3.23	5 19 36.5	2 34 59.71	0.768	12 44 31.1	3.17
6	2 35 3.08	0.768	12 44 45.0	3.16	6 19 32.8	2 35 18.01	0.756	12 45 46.3	3.10
7	2 35 21.37	0.756	12 46 0.1	3.09	7 19 29.2	2 35 36.00	0.744	12 46 59.9	3.03
8	2 35 39.36	0.744	12 47 13.5	3.02	8 19 25.6	2 35 53.70	0.731	12 48 11.7	2.96
9	2 35 57.05	0.731	12 48 25.2	2.95	9 19 21.9	2 36 11.09	0.718	12 49 21.9	2.89
10	2 36 14.43	0.718	12 49 35.3	2.88	10 19 18.3	2 36 28.18	0.705	12 50 30.5	2.82
11	2 36 31.50	0.705	12 50 43.7	2.81	11 19 14.6	2 36 44.96	0.692	12 51 37.2	2.75
12	2 36 48.26	0.692	12 51 50.3	2.74	12 19 11.0	2 37 1.43	0.679	12 52 42.4	2.68
13	2 37 4.71	0.679	12 52 55.3	2.67	13 19 7.3	2 37 17.57	0.665	12 53 45.8	2.61
14	2 37 20.83	0.665	12 53 58.5	2.60	14 19 3.6	2 37 33.40	0.652	12 54 47.5	2.53
15	2 37 36.63	0.651	12 55 0.0	2.52	15 19 0.0	2 37 48.90	0.639	12 55 47.4	2.46
16	2 37 52.10	0.638	12 55 59.7	2.45	16 18 56.3	2 38 4.08	0.625	12 56 45.6	2.39
17	2 38 7.25	0.624	12 56 57.7	2.38	17 18 52.6	2 38 18.92	0.611	12 57 42.1	2.32
18	2 38 22.06	0.610	12 57 54.0	2.31	18 18 48.9	2 38 33.43	0.597	12 58 36.9	2.24
19	2 38 36.53	0.596	12 58 48.5	2.23	19 18 45.2	2 38 47.60	0.583	12 59 29.7	2.16
20	2 38 50.66	0.581	12 59 41.1	2.15	20 18 41.5	2 39 1.42	0.569	13 0 20.8	2.09
21	2 39 4.44	0.567	13 0 31.9	2.08	21 18 37.8	2 39 14.89	0.554	13 1 10.2	2.02
22	2 39 17.87	0.552	13 1 21.0	2.01	22 18 34.1	2 39 28.02	0.539	13 1 57.8	1.94
23	2 39 30.95	0.537	13 2 8.3	1.93	23 18 30.4	2 39 40.79	0.524	13 2 43.5	1.86
24	2 39 43.67	0.522	13 2 53.7	1.85	24 18 26.6	2 39 53.20	0.509	13 3 27.4	1.79
25	2 39 56.03	0.507	13 3 37.3	1.78	25 18 22.9	2 40 5.25	0.494	13 4 9.4	1.71
26	2 40 8.02	0.492	13 4 19.0	1.70	26 18 19.2	2 40 16.93	0.479	13 4 49.6	1.63
27	2 40 19.64	0.476	13 4 58.9	1.62	27 18 15.4	2 40 28.24	0.464	13 5 27.9	1.56
28	2 40 30.99	0.461	13 5 36.9	1.55	28 18 11.7	2 40 39.18	0.448	13 6 4.5	1.48
29	2 40 41.77	0.445	13 6 13.1	1.47	29 18 7.9	2 40 49.75	0.433	13 6 39.2	1.40
30	2 40 52.27	0.430	13 6 47.4	1.39	30 18 4.1	2 40 59.93	0.417	13 7 11.9	1.32
31	2 41 2.39	0.414	13 7 19.8	1.31	31 18 0.4	2 41 9.74	0.401	13 7 42.9	1.24
Aug. 1	2 41 12.13	0.398	13 7 50.4	1.23	1 17 56.6	2 41 19.16	0.385	13 8 12.0	1.17
2	2 41 21.48	0.382	13 8 19.1	1.16	2 17 52.8	2 41 28.21	0.369	13 8 39.2	1.09
3	2 41 30.45	0.366	13 8 45.9	1.08	3 17 49.0	2 41 36.86	0.353	13 9 4.5	1.01
4	2 41 39.03	0.350	13 9 10.8	1.00	4 17 45.2	2 41 45.14	0.336	13 9 28.0	0.93
5	2 41 47.23	0.333	13 9 33.9	0.92	5 17 41.4	2 41 53.02	0.320	13 9 49.7	0.86
6	2 41 55.03	0.317	13 9 55.1	0.84	6 17 37.6	2 42 0.52	0.304	13 10 9.4	0.79
7	2 42 2.44	0.301	13 10 14.4	0.77	7 17 33.8	2 42 7.62	0.288	13 10 27.4	0.71
8	2 42 9.46	0.284	13 10 31.9	0.69	8 17 30.0	2 42 14.33	0.272	13 10 43.4	0.63
9	2 42 16.08	0.268	13 10 47.4	0.61	9 17 26.2	2 42 20.64	0.255	13 10 57.5	0.55
10	2 42 22.30	0.251	13 11 1.0	0.53	10 17 22.3	2 42 26.56	0.238	13 11 9.7	0.47
11	2 42 28.12	0.234	13 11 12.7	0.45	11 17 18.5	2 42 32.08	0.221	13 11 20.0	0.39
12	2 42 33.54	0.217	13 11 22.5	0.37	12 17 14.6	2 42 37.19	0.204	13 11 28.4	0.31
13	2 42 38.55	0.200	13 11 30.4	0.29	13 17 10.8	2 42 41.89	0.188	13 11 34.9	0.23
14	2 42 43.15	0.183	13 11 36.4	0.21	14 17 6.9	2 42 46.20	0.171	13 11 39.5	0.15
15	2 42 47.35	0.166	13 11 40.5	0.13	15 17 3.1	2 42 50.10	0.154	13 11 42.3	+0.07
16	2 42 51.14	0.149	13 11 42.7	+0.05	16 16 59.2	2 42 53.58	0.138	13 11 43.1	0.00
17	2 42 54.51	0.132	13 11 43.0	-0.03	17 16 55.3	2 42 56.64	0.120	13 11 42.1	-0.08
18	2 42 57.46	0.114	13 11 41.4	0.11	18 16 51.4	2 42 59.30	0.102	13 11 39.1	0.16
19	2 43 0.00	0.097	13 11 37.8	0.19	19 16 47.5	2 43 1.54	0.086	13 11 34.2	0.24
20	2 43 2.12	0.080	13 11 32.4	0.26	20 16 43.6	2 43 3.37	0.068	13 11 27.5	0.32
21	2 43 3.83	0.062	13 11 25.1	0.34	21 16 39.7	2 43 4.78	0.051	13 11 18.9	0.40
22	2 43 5.12	0.045	13 11 15.9	0.42	22 16 35.8	2 43 5.78	0.033	13 11 8.4	0.48
23	2 43 5.99	0.027	13 11 4.8	0.50	23 16 31.9	2 43 6.35	+0.015	13 10 56.0	0.55
24	2 43 6.44	+0.010	13 10 51.8	0.58	24 16 27.9	2 43 6.52	-0.002	13 10 41.8	0.63
25	2 43 6.48	-0.007	13 10 36.9	0.66	25 16 24.0	2 43 6.26	0.020	13 10 25.6	0.71
26	2 43 6.09	0.025	13 10 20.1	0.74	26 16 20.1	2 43 5.58	0.037	13 10 7.6	0.79
27	2 43 5.28	0.042	13 10 1.4	0.82	27 16 16.1	2 43 4.49	0.054	13 9 47.7	0.87
28	2 43 4.05	0.060	13 9 40.9	0.89	28 16 12.2	2 43 2.99	0.071	13 9 26.0	0.94
29	2 43 2.41	0.077	13 9 18.5	0.97	29 16 8.2	2 43 1.07	0.088	13 9 2.5	1.02
30	2 43 0.35	0.094	13 8 54.3	1.05	30 16 4.2	2 42 58.75	0.106	13 8 37.1	1.10
31	2 42 57.88	-0.112	13 8 28.2	-1.12	31 16 0.3	2 42 56.00	-0.123	13 8 9.9	-1.17

Date. 1881.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
Sept. 1	h m s 2 42 54.99	-0.129	+13 8 0.4	-1.20	d h m 1 15 56.3	2 42 52.86	-0.139	+13 7 40.9	-1.25
2	2 42 51.70	0.146	13 7 30.7	1.27	2 15 52.3	2 42 49.31	0.157	13 7 10.1	1.33
3	2 42 48.00	0.163	13 6 59.2	1.35	3 15 48.3	2 42 45.35	0.173	13 6 37.6	1.40
4	2 42 43.89	0.180	13 6 26.0	1.42	4 15 44.3	2 42 40.98	0.190	13 6 3.3	1.47
5	2 42 39.37	0.197	13 5 51.0	1.50	5 15 40.3	2 42 36.21	0.207	13 5 27.2	1.54
6	2 42 34.45	0.213	13 5 14.2	1.57	6 15 36.2	2 42 31.03	0.224	13 4 49.4	1.61
7	2 42 29.12	0.230	13 4 35.7	1.64	7 15 32.2	2 42 25.47	0.240	13 4 9.8	1.68
8	2 42 23.40	0.247	13 3 55.4	1.71	8 15 28.2	2 42 19.51	0.256	13 3 28.5	1.76
9	2 42 17.28	0.263	13 3 13.4	1.79	9 15 24.2	2 42 13.16	0.273	13 2 45.5	1.83
10	2 42 10.77	0.280	13 2 29.7	1.86	10 15 20.1	2 42 6.41	0.289	13 2 0.8	1.89
11	2 42 3.86	0.296	13 1 44.3	1.92	11 15 16.1	2 41 59.28	0.305	13 1 14.6	1.96
12	2 41 56.57	0.312	13 0 57.3	1.99	12 15 12.0	2 41 51.76	0.321	13 0 26.6	2.03
13	2 41 48.89	0.328	13 0 8.6	2.06	13 15 7.9	2 41 43.85	0.337	12 59 37.0	2.10
14	2 41 40.82	0.344	12 59 18.2	2.13	14 15 3.9	2 41 35.56	0.353	12 58 45.8	2.17
15	2 41 32.37	0.360	12 58 26.2	2.20	15 14 59.8	2 41 26.90	0.369	12 57 53.0	2.23
16	2 41 23.54	0.376	12 57 32.7	2.26	16 14 55.7	2 41 17.86	0.384	12 56 58.6	2.30
17	2 41 14.34	0.391	12 56 37.5	2.33	17 14 51.6	2 41 8.45	0.400	12 56 2.6	2.36
18	2 41 4.76	0.407	12 55 40.8	2.39	18 14 47.5	2 40 58.68	0.415	12 55 5.2	2.43
19	2 40 54.82	0.422	12 54 42.6	2.46	19 14 43.4	2 40 48.54	0.430	12 54 6.1	2.49
20	2 40 44.51	0.437	12 53 42.8	2.52	20 14 39.3	2 40 38.04	0.445	12 53 5.6	2.55
21	2 40 33.85	0.452	12 52 41.5	2.58	21 14 35.2	2 40 27.19	0.459	12 52 3.6	2.61
22	2 40 22.83	0.466	12 51 38.8	2.64	22 14 31.1	2 40 15.99	0.474	12 51 0.1	2.67
23	2 40 11.47	0.480	12 50 34.6	2.70	23 14 27.0	2 40 4.46	0.487	12 49 55.3	2.73
24	2 39 59.77	0.495	12 49 29.1	2.76	24 14 22.8	2 39 52.59	0.501	12 48 49.2	2.78
25	2 39 47.73	0.508	12 48 22.2	2.81	25 14 18.7	2 39 40.39	0.515	12 47 41.7	2.84
26	2 39 35.37	0.522	12 47 14.0	2.87	26 14 14.6	2 39 27.88	0.528	12 46 32.9	2.89
27	2 39 22.69	0.535	12 46 4.5	2.92	27 14 10.4	2 39 15.04	0.541	12 45 22.8	2.94
28	2 39 9.69	0.548	12 44 53.7	2.97	28 14 6.3	2 39 1.91	0.554	12 44 11.5	3.00
29	2 38 56.39	0.561	12 43 41.7	3.03	29 14 2.1	2 38 48.46	0.566	12 42 58.9	3.05
30	2 38 42.78	0.573	12 42 28.4	3.08	30 13 58.0	2 38 34.72	0.578	12 41 45.2	3.09
Oct. 1	2 38 28.88	0.585	12 41 14.0	3.12	1 13 53.8	2 38 20.70	0.590	12 40 30.3	3.14
2	2 38 14.70	0.597	12 39 58.4	3.17	2 13 49.6	2 38 6.40	0.602	12 39 14.4	3.18
3	2 38 0.24	0.608	12 38 41.8	3.21	3 13 45.4	2 37 51.82	0.613	12 37 57.3	3.23
4	2 37 45.50	0.620	12 37 24.1	3.26	4 13 41.3	2 37 36.98	0.625	12 36 39.3	3.27
5	2 37 30.50	0.630	12 36 5.4	3.30	5 13 37.1	2 37 21.87	0.635	12 35 20.2	3.31
6	2 37 15.24	0.641	12 34 45.7	3.34	6 13 32.9	2 37 6.51	0.645	12 34 0.3	3.35
7	2 36 59.73	0.651	12 33 25.1	3.38	7 13 28.7	2 36 50.91	0.655	12 32 30.3	3.39
8	2 36 43.98	0.661	12 32 3.5	3.42	8 13 24.5	2 36 35.07	0.664	12 31 17.5	3.43
9	2 36 27.99	0.671	12 30 41.1	3.45	9 13 20.3	2 36 19.00	0.674	12 29 54.8	3.46
10	2 36 11.78	0.680	12 29 17.8	3.48	10 13 16.1	2 36 2.72	0.683	12 28 31.5	3.49
11	2 35 55.35	0.689	12 27 53.8	3.52	11 13 11.9	2 35 46.23	0.692	12 27 7.3	3.52
12	2 35 38.72	0.697	12 26 29.0	3.55	12 13 7.7	2 35 29.54	0.700	12 25 42.4	3.55
13	2 35 21.89	0.705	12 25 3.5	3.58	13 13 3.5	2 35 12.64	0.708	12 24 16.7	3.58
14	2 35 4.86	0.713	12 23 37.3	3.61	14 12 59.3	2 34 55.56	0.715	12 22 50.3	3.61
15	2 34 47.65	0.721	12 22 10.4	3.63	15 12 55.0	2 34 38.30	0.723	12 21 23.4	3.63
16	2 34 30.26	0.728	12 20 43.0	3.65	16 12 50.8	2 34 20.88	0.730	12 19 55.9	3.65
17	2 34 12.71	0.735	12 19 15.0	3.67	17 12 46.6	2 34 3.29	0.736	12 18 28.0	3.67
18	2 33 55.00	0.741	12 17 46.6	3.69	18 12 42.4	2 33 45.55	0.742	12 16 59.5	3.69
19	2 33 37.14	0.747	12 16 17.7	3.71	19 12 38.1	2 33 27.68	0.748	12 15 30.8	3.71
20	2 33 19.15	0.752	12 14 48.5	3.72	20 12 33.9	2 33 9.68	0.753	12 14 1.6	3.72
21	2 33 1.04	0.757	12 13 18.9	3.74	21 12 29.7	2 32 51.55	0.758	12 12 32.2	3.74
22	2 32 42.81	0.762	12 11 49.1	3.75	22 12 25.5	2 32 33.32	0.762	12 11 2.5	3.75
23	2 32 24.48	0.766	12 10 19.0	3.76	23 12 21.2	2 32 14.99	0.766	12 9 32.7	3.76
24	2 32 6.05	0.770	12 8 48.8	3.76	24 12 17.0	2 31 56.58	0.770	12 8 2.6	3.76
25	2 31 47.54	0.773	12 7 18.4	3.77	25 12 12.7	2 31 38.08	0.773	12 6 32.4	3.76
26	2 31 28.95	0.776	12 5 47.9	3.77	26 12 8.5	2 31 19.51	0.775	12 5 2.2	3.76
27	2 31 10.30	0.778	12 4 17.4	3.77	27 12 4.3	2 31 0.90	0.777	12 3 32.0	3.75
28	2 30 51.61	0.780	12 2 47.0	3.78	28 12 0.0	2 30 42.25	0.779	12 2 1.8	3.75
29	2 30 32.88	0.781	12 1 16.6	3.76	29 11 55.8	2 30 23.56	0.780	12 0 31.8	3.74
30	2 30 14.12	0.782	11 59 46.4	3.75	30 11 51.5	2 30 4.85	0.780	11 59 1.9	3.74
31	2 29 55.34	0.782	11 58 16.4	3.75	31 11 47.3	2 29 46.12	0.780	11 57 32.3	3.73
32	2 29 36.56	-0.782	+11 56 46.6	-3.74	32 11 43.0	2 29 27.40	-0.780	+11 56 2.8	-3.72

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Nov. 1	2 29 36.56	-0.782	+11 56 46.6	-3.74	1 11 43.0	2 29 27.40	-0.780	+11 56 2.8	-3.72
2	2 29 17.78	0.782	11 55 17.1	3.72	2 11 38.8	2 29 8.68	0.780	11 54 33.7	3.71
3	2 28 59.01	0.781	11 53 47.9	3.71	3 11 34.5	2 28 49.98	0.779	11 53 5.0	3.69
4	2 28 40.27	0.780	11 52 19.1	3.69	4 11 30.3	2 28 31.30	0.778	11 51 36.7	3.67
5	2 28 21.56	0.779	11 50 50.7	3.67	5 11 26.1	2 28 12.66	0.776	11 50 8.8	3.65
6	2 28 2.89	0.777	11 49 22.8	3.65	6 11 21.8	2 27 54.07	0.774	11 48 41.4	3.63
7	2 27 44.28	0.774	11 47 55.5	3.62	7 11 17.6	2 27 35.54	0.771	11 47 14.7	3.60
8	2 27 25.73	0.771	11 46 28.7	3.60	8 11 13.4	2 27 17.08	0.768	11 45 48.4	3.58
9	2 27 7.25	0.768	11 45 2.6	3.57	9 11 9.1	2 26 58.69	0.764	11 44 22.9	3.55
10	2 26 48.86	0.764	11 43 37.1	3.55	10 11 4.9	2 26 40.40	0.760	11 42 58.0	3.52
11	2 26 30.56	0.760	11 42 12.4	3.51	11 11 0.6	2 26 22.20	0.756	11 41 33.9	3.49
12	2 26 12.36	0.756	11 40 48.4	3.48	12 10 56.4	2 26 4.10	0.751	11 40 10.5	3.46
13	2 25 54.28	0.751	11 39 25.3	3.44	13 10 52.2	2 25 46.13	0.746	11 38 48.0	3.42
14	2 25 36.32	0.746	11 38 3.1	3.41	14 10 48.0	2 25 28.29	0.741	11 37 26.5	3.38
15	2 25 18.49	0.740	11 36 41.8	3.37	15 10 43.7	2 25 10.57	0.735	11 36 5.8	3.34
16	2 25 0.80	0.734	11 35 21.5	3.32	16 10 39.5	2 24 53.00	0.729	11 34 46.2	3.30
17	2 24 43.27	0.727	11 34 2.3	3.28	17 10 35.3	2 24 35.59	0.722	11 33 27.7	3.25
18	2 24 25.01	0.720	11 32 44.1	3.23	18 10 31.1	2 24 18.36	0.715	11 32 10.2	3.20
19	2 24 8.72	0.712	11 31 27.1	3.18	19 10 26.8	2 24 1.30	0.707	11 30 54.0	3.15
20	2 23 51.72	0.704	11 30 11.3	3.13	20 10 22.6	2 23 44.43	0.699	11 29 38.9	3.10
21	2 23 34.91	0.696	11 28 56.7	3.08	21 10 18.4	2 23 27.75	0.690	11 28 25.1	3.05
22	2 23 18.31	0.687	11 27 43.4	3.02	22 10 14.2	2 23 11.29	0.681	11 27 12.6	3.00
23	2 23 1.92	0.678	11 26 31.5	2.97	23 10 10.0	2 22 55.04	0.672	11 26 1.4	2.94
24	2 22 45.75	0.669	11 25 20.9	2.91	24 10 5.8	2 22 39.01	0.662	11 24 51.6	2.88
25	2 22 29.82	0.659	11 24 11.7	2.85	25 10 1.6	2 22 23.23	0.652	11 23 43.2	2.82
26	2 22 14.13	0.649	11 23 4.0	2.79	26 9 57.4	2 22 7.69	0.642	11 22 36.3	2.76
27	2 21 58.69	0.638	11 21 57.7	2.73	27 9 53.3	2 21 52.40	0.631	11 21 30.8	2.69
28	2 21 43.51	0.627	11 20 53.0	2.66	28 9 49.1	2 21 37.37	0.620	11 20 27.0	2.63
29	2 21 28.60	0.616	11 19 49.9	2.60	29 9 44.9	2 21 22.61	0.609	11 19 24.7	2.56
30	2 21 13.96	0.604	11 18 48.4	2.53	30 9 40.7	2 21 8.13	0.597	11 18 24.0	2.49
Dec. 1	2 20 59.61	0.592	11 17 48.6	2.46	1 9 36.6	2 20 53.94	0.585	11 17 25.0	2.42
2	2 20 45.55	0.580	11 16 50.5	2.39	2 9 32.4	2 20 40.04	0.573	11 16 27.8	2.35
3	2 20 31.78	0.567	11 15 54.0	2.32	3 9 28.2	2 20 26.43	0.561	11 15 32.1	2.28
4	2 20 18.31	0.555	11 14 59.3	2.24	4 9 24.1	2 20 13.12	0.548	11 14 38.3	2.21
5	2 20 5.15	0.542	11 14 6.3	2.17	5 9 19.9	2 20 0.12	0.535	11 13 46.1	2.13
6	2 19 52.81	0.528	11 13 15.2	2.09	6 9 15.8	2 19 47.43	0.522	11 12 55.9	2.06
7	2 19 39.79	0.515	11 12 25.9	2.01	7 9 11.6	2 19 35.07	0.508	11 12 7.5	1.98
8	2 19 27.60	0.501	11 11 38.5	1.93	8 9 7.5	2 19 23.04	0.494	11 11 20.9	1.90
9	2 19 15.74	0.487	11 10 53.0	1.85	9 9 3.4	2 19 11.35	0.480	11 10 36.3	1.82
10	2 19 4.22	0.473	11 10 9.5	1.77	10 8 59.3	2 18 59.99	0.466	11 9 53.6	1.74
11	2 18 53.05	0.458	11 9 27.9	1.69	11 8 55.2	2 18 48.99	0.451	11 9 12.9	1.66
12	2 18 42.23	0.443	11 8 48.3	1.61	12 8 51.0	2 18 38.33	0.436	11 8 34.1	1.58
13	2 18 31.77	0.428	11 8 10.7	1.52	13 8 46.9	2 18 28.03	0.421	11 7 57.4	1.49
14	2 18 21.67	0.413	11 7 35.1	1.44	14 8 42.8	2 18 18.09	0.406	11 7 22.6	1.41
15	2 18 11.94	0.398	11 7 1.6	1.35	15 8 38.8	2 18 8.52	0.391	11 6 50.0	1.32
16	2 18 2.58	0.382	11 6 30.2	1.27	16 8 34.7	2 17 59.33	0.375	11 6 19.4	1.23
17	2 17 53.61	0.366	11 6 0.8	1.18	17 8 30.6	2 17 50.52	0.359	11 5 50.9	1.14
18	2 17 45.02	0.350	11 5 33.6	1.09	18 8 26.5	2 17 42.10	0.343	11 5 24.5	1.05
19	2 17 36.82	0.333	11 5 8.5	1.00	19 8 22.5	2 17 34.06	0.327	11 5 0.3	0.96
20	2 17 29.01	0.317	11 4 45.6	0.91	20 8 18.4	2 17 26.41	0.311	11 4 38.2	0.87
21	2 17 21.60	0.300	11 4 24.9	0.82	21 8 14.3	2 17 19.15	0.294	11 4 18.3	0.78
22	2 17 14.59	0.283	11 4 6.3	0.73	22 8 10.3	2 17 12.30	0.277	11 4 0.5	0.69
23	2 17 7.99	0.267	11 3 50.0	0.63	23 8 6.3	2 17 5.85	0.260	11 3 45.0	0.60
24	2 17 1.79	0.250	11 3 35.9	0.54	24 8 2.2	2 16 59.80	0.243	11 3 31.7	0.51
25	2 16 56.01	0.232	11 3 24.1	0.45	25 7 58.2	2 16 54.18	0.226	11 3 20.7	0.42
26	2 16 50.64	0.215	11 3 14.5	0.35	26 7 54.2	2 16 48.97	0.209	11 3 11.9	0.33
27	2 16 45.69	0.197	11 3 7.1	0.26	27 7 50.2	2 16 44.17	0.191	11 3 5.2	0.23
28	2 16 41.16	0.180	11 3 2.0	0.16	28 7 46.2	2 16 39.79	0.174	11 3 0.8	0.14
29	2 16 37.05	0.162	11 2 59.2	-0.07	29 7 42.2	2 16 35.83	0.156	11 2 58.7	-0.05
30	2 16 33.37	0.145	11 2 58.6	+0.02	30 7 38.2	2 16 32.29	0.139	11 2 58.8	+0.05
31	2 16 30.10	0.127	11 3 0.2	0.11	31 7 34.2	2 16 29.16	0.121	11 3 1.1	0.14
32	2 16 27.26	-0.110	+11 3 4.1	+0.20	32 7 30.2	2 16 26.46	-0.104	+11 3 5.7	+0.23

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Jan. 1	h m s 11 1 9.03	-0.117	° ′ ″ +7 8 47.8	+0.84	d h m 1 16 12.5	h m s 11 1 7.08	-0.122	° ′ ″ +7 9 1.7	+0.87
2	11 1 6.11	0.126	7 9 8.6	0.89	2 16 8.5	11 1 4.04	0.131	7 9 23.3	0.92
3	11 1 2.99	0.134	7 9 30.6	0.94	3 16 4.6	11 1 0.79	0.139	7 9 46.1	0.97
4	11 0 59.68	0.142	7 9 53.9	0.99	4 16 0.6	11 0 57.36	0.147	7 10 10.0	1.02
5	11 0 56.17	0.150	7 10 18.3	1.04	5 15 56.6	11 0 53.73	0.155	7 10 35.1	1.07
6	11 0 52.46	0.158	7 10 43.8	1.09	6 15 52.6	11 0 49.90	0.163	7 11 1.4	1.12
7	11 0 48.56	0.167	7 11 10.6	1.14	7 15 48.6	11 0 45.89	0.171	7 11 28.8	1.17
8	11 0 44.47	0.175	7 11 38.5	1.19	8 15 44.6	11 0 41.69	0.179	7 11 57.4	1.21
9	11 0 40.20	0.182	7 12 7.5	1.23	9 15 40.6	11 0 37.30	0.187	7 12 27.1	1.26
10	11 0 35.73	0.189	7 12 37.7	1.28	10 15 36.6	11 0 32.73	0.194	7 12 57.9	1.31
11	11 0 31.09	0.197	7 13 8.9	1.32	11 15 32.6	11 0 27.98	0.201	7 13 29.8	1.35
12	11 0 26.26	0.204	7 13 41.3	1.37	12 15 28.6	11 0 23.05	0.209	7 14 2.8	1.40
13	11 0 21.25	0.212	7 14 14.8	1.42	13 15 24.5	11 0 17.94	0.216	7 14 36.8	1.44
14	11 0 16.06	0.219	7 14 49.3	1.46	14 15 20.5	11 0 12.66	0.223	7 15 11.9	1.48
15	11 0 10.70	0.226	7 15 24.8	1.50	15 15 16.5	11 0 7.21	0.231	7 15 48.0	1.52
16	11 0 5.17	0.234	7 16 1.4	1.54	16 15 12.5	11 0 1.58	0.238	7 16 25.1	1.57
17	10 59 59.47	0.241	7 16 38.9	1.59	17 15 8.4	10 59 55.79	0.245	7 17 3.2	1.61
18	10 59 53.60	0.246	7 17 17.5	1.63	18 15 4.4	10 59 49.83	0.252	7 17 42.3	1.65
19	10 59 47.56	0.255	7 17 57.1	1.67	19 15 0.4	10 59 43.70	0.259	7 18 22.4	1.69
20	10 59 41.36	0.262	7 18 37.7	1.71	20 14 56.3	10 59 37.42	0.265	7 19 3.4	1.73
21	10 59 35.00	0.268	7 19 19.2	1.75	21 14 52.3	10 59 30.98	0.272	7 19 45.3	1.77
22	10 59 28.48	0.275	7 20 1.5	1.79	22 14 48.2	10 59 24.38	0.278	7 20 28.2	1.81
23	10 59 21.81	0.281	7 20 44.9	1.82	23 14 44.2	10 59 17.63	0.284	7 21 12.0	1.84
24	10 59 14.98	0.288	7 21 29.2	1.86	24 14 40.1	10 59 10.73	0.290	7 21 56.7	1.88
25	10 59 8.00	0.294	7 22 14.3	1.90	25 14 36.1	10 59 3.69	0.297	7 22 42.2	1.92
26	10 59 0.88	0.300	7 23 0.3	1.93	26 14 32.0	10 58 56.50	0.303	7 23 28.6	1.95
27	10 58 53.61	0.306	7 23 47.1	1.97	27 14 28.0	10 58 49.17	0.309	7 24 15.9	1.98
28	10 58 46.21	0.311	7 24 34.8	2.00	28 14 23.9	10 58 41.70	0.314	7 25 3.8	2.02
29	10 58 38.66	0.316	7 25 23.3	2.03	29 14 19.9	10 58 34.10	0.319	7 25 52.6	2.05
30	10 58 30.99	0.322	7 26 12.5	2.06	30 14 15.8	10 58 26.37	0.324	7 26 42.1	2.08
31	10 58 23.18	0.327	7 27 2.4	2.09	31 14 11.7	10 58 18.51	0.329	7 27 32.3	2.11
Feb. 1	10 58 15.25	0.333	7 27 53.0	2.12	1 14 7.7	10 58 10.52	0.334	7 28 23.2	2.14
2	10 58 7.20	0.338	7 28 44.4	2.15	2 14 3.6	10 58 2.42	0.339	7 29 14.9	2.17
3	10 57 59.03	0.343	7 29 36.4	2.18	3 13 59.6	10 57 54.21	0.344	7 30 7.1	2.19
4	10 57 50.74	0.347	7 30 29.1	2.21	4 13 55.5	10 57 45.88	0.349	7 31 0.0	2.21
5	10 57 42.35	0.351	7 31 22.4	2.23	5 13 51.4	10 57 37.45	0.353	7 31 53.4	2.24
6	10 57 33.85	0.356	7 32 16.2	2.26	6 13 47.4	10 57 28.92	0.357	7 32 47.4	2.26
7	10 57 25.25	0.360	7 33 10.7	2.28	7 13 43.3	10 57 20.29	0.361	7 33 42.0	2.29
8	10 57 16.55	0.364	7 34 5.6	2.30	8 13 39.2	10 57 11.56	0.365	7 34 37.1	2.31
9	10 57 7.76	0.368	7 35 1.1	2.32	9 13 35.1	10 57 2.74	0.369	7 35 32.7	2.33
10	10 56 58.88	0.372	7 35 57.0	2.34	10 13 31.0	10 56 53.84	0.372	7 36 28.7	2.35
11	10 56 49.91	0.375	7 36 53.4	2.36	11 13 27.0	10 56 44.85	0.376	7 37 25.2	2.36
12	10 56 40.86	0.379	7 37 50.3	2.38	12 13 22.9	10 56 35.78	0.379	7 38 22.2	2.38
13	10 56 31.73	0.382	7 38 47.6	2.40	13 13 18.8	10 56 26.64	0.382	7 39 19.5	2.40
14	10 56 22.53	0.385	7 39 45.2	2.41	14 13 14.7	10 56 17.42	0.385	7 40 17.2	2.41
15	10 56 13.26	0.387	7 40 43.2	2.42	15 13 10.6	10 56 8.14	0.388	7 41 15.2	2.42
16	10 56 3.92	0.390	7 41 41.6	2.44	16 13 6.5	10 55 58.79	0.391	7 42 13.6	2.44
17	10 55 54.52	0.393	7 42 40.3	2.45	17 13 2.4	10 55 49.39	0.393	7 43 12.3	2.45
18	10 55 45.06	0.395	7 43 39.3	2.46	18 12 58.4	10 55 39.93	0.395	7 44 11.2	2.46
19	10 55 35.55	0.397	7 44 38.5	2.47	19 12 54.3	10 55 30.42	0.397	7 45 10.4	2.47
20	10 55 25.99	0.399	7 45 37.9	2.48	20 12 50.2	10 55 20.86	0.399	7 46 9.8	2.48
21	10 55 16.38	0.401	7 46 37.6	2.49	21 12 46.1	10 55 11.25	0.401	7 47 9.4	2.49
22	10 55 6.73	0.403	7 47 37.6	2.50	22 12 42.0	10 55 1.61	0.403	7 48 9.2	2.49
23	10 54 57.05	0.404	7 48 37.5	2.50	23 12 37.9	10 54 51.93	0.404	7 49 9.1	2.50
24	10 54 47.33	0.405	7 49 37.6	2.51	24 12 33.8	10 54 42.23	0.405	7 50 9.1	2.50
25	10 54 37.58	0.406	7 50 37.8	2.51	25 12 29.7	10 54 32.50	0.406	7 51 9.2	2.51
26	10 54 27.81	0.407	7 51 38.1	2.51	26 12 25.6	10 54 22.74	0.407	7 52 9.4	2.51
27	10 54 18.02	0.408	7 52 38.5	2.51	27 12 21.5	10 54 12.97	0.407	7 53 9.6	2.51
28	10 54 8.22	0.409	7 53 38.8	2.51	28 12 17.4	10 54 3.19	0.408	7 54 9.7	2.51
29	10 53 58.41	0.409	7 54 39.2	2.51	29 12 13.3	10 53 53.41	0.408	7 55 9.9	2.51
30	10 53 48.59	0.409	7 55 39.4	2.51	30 12 9.2	10 53 43.62	0.408	7 56 10.0	2.50
31	10 53 38.78	-0.409	+7 56 39.6	+2.51	31 12 5.1	10 53 33.84	-0.408	+7 57 10.0	+2.50

Date. 1881.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
Mar. 1	10 53 58.41	-0.409	+7 54 39.2	+2.51	1 12 13.3	10 53 53.41	-0.408	+7 55 9.9	+2.51
2	10 53 48.59	0.409	7 55 39.4	2.51	2 12 9.2	10 53 43.62	0.408	7 56 10.0	2.50
3	10 53 38.78	0.409	7 56 39.6	2.51	3 12 5.1	10 53 33.84	0.408	7 57 10.0	2.50
4	10 53 28.96	0.409	7 57 39.7	2.50	4 12 1.1	10 53 24.06	0.407	7 58 9.9	2.49
5	10 53 19.16	0.408	7 58 39.7	2.50	5 11 57.0	10 53 14.29	0.407	7 59 9.6	2.48
6	10 53 9.37	0.407	7 59 39.5	2.49	6 11 52.9	10 53 4.53	0.406	8 0 9.1	2.47
7	10 52 59.60	0.406	8 0 39.1	2.48	7 11 48.8	10 52 54.80	0.405	8 1 8.4	2.47
8	10 52 49.85	0.405	8 1 38.5	2.47	8 11 44.7	10 52 45.09	0.404	8 2 7.5	2.46
9	10 52 40.13	0.404	8 2 37.7	2.46	9 11 40.6	10 52 35.41	0.403	8 3 6.4	2.45
10	10 52 30.44	0.403	8 3 36.6	2.45	10 11 36.5	10 52 25.77	0.401	8 4 5.0	2.44
11	10 52 20.79	0.401	8 4 35.2	2.44	11 11 32.4	10 52 16.16	0.400	8 5 3.3	2.42
12	10 52 11.17	0.400	8 5 33.5	2.42	12 11 28.3	10 52 6.59	0.398	8 6 1.2	2.41
13	10 52 1.61	0.398	8 6 31.5	2.41	13 11 24.2	10 51 57.07	0.396	8 6 58.9	2.40
14	10 51 52.08	0.396	8 7 29.1	2.39	14 11 20.1	10 51 47.60	0.393	8 7 56.2	2.38
15	10 51 42.61	0.393	8 8 26.3	2.37	15 11 16.0	10 51 38.19	0.391	8 8 53.0	2.36
16	10 51 33.20	0.391	8 9 23.1	2.35	16 11 12.0	10 51 28.83	0.389	8 9 49.5	2.34
17	10 51 23.85	0.388	8 10 19.5	2.34	17 11 7.9	10 51 19.53	0.386	8 10 45.5	2.32
18	10 51 14.56	0.386	8 11 15.3	2.32	18 11 3.8	10 51 10.29	0.384	8 11 41.0	2.30
19	10 51 5.33	0.383	8 12 10.8	2.30	19 10 59.7	10 51 1.12	0.380	8 12 36.0	2.29
20	10 50 56.17	0.380	8 13 5.7	2.28	20 10 55.6	10 50 52.03	0.377	8 13 30.5	2.26
21	10 50 47.09	0.377	8 14 0.1	2.25	21 10 51.5	10 50 43.01	0.374	8 14 24.5	2.24
22	10 50 38.09	0.374	8 14 53.9	2.23	22 10 47.4	10 50 34.07	0.370	8 15 18.0	2.21
23	10 50 29.18	0.369	8 15 47.2	2.21	23 10 43.4	10 50 25.22	0.367	8 16 10.8	2.19
24	10 50 20.35	0.366	8 16 39.9	2.18	24 10 39.3	10 50 16.46	0.363	8 17 3.1	2.17
25	10 50 11.61	0.362	8 17 32.0	2.16	25 10 35.2	10 50 7.79	0.359	8 17 54.8	2.14
26	10 50 2.97	0.358	8 18 23.4	2.13	26 10 31.1	10 49 59.21	0.355	8 18 45.7	2.11
27	10 49 54.42	0.354	8 19 14.1	2.10	27 10 27.0	10 49 50.73	0.351	8 19 36.0	2.08
28	10 49 45.99	0.349	8 20 4.2	2.07	28 10 23.0	10 49 42.36	0.346	8 20 25.6	2.05
29	10 49 37.65	0.345	8 20 53.5	2.04	29 10 18.9	10 49 34.10	0.341	8 21 14.5	2.02
30	10 49 29.43	0.340	8 21 42.1	2.01	30 10 14.8	10 49 25.95	0.337	8 22 2.7	1.99
31	10 49 21.32	0.335	8 22 30.0	1.98	31 10 10.8	10 49 17.91	0.332	8 22 50.1	1.96
Apr. 1	10 49 13.33	0.330	8 23 17.1	1.95	1 10 6.7	10 49 9.99	0.327	8 23 36.7	1.92
2	10 49 5.45	0.325	8 24 3.4	1.91	2 10 2.6	10 49 2.19	0.322	8 24 22.5	1.89
3	10 48 57.71	0.319	8 24 48.8	1.87	3 9 58.6	10 48 54.52	0.316	8 25 7.4	1.85
4	10 48 50.09	0.314	8 25 33.3	1.84	4 9 54.5	10 48 46.98	0.311	8 25 51.5	1.82
5	10 48 42.60	0.309	8 26 17.1	1.81	5 9 50.5	10 48 39.57	0.306	8 26 34.8	1.79
6	10 48 35.25	0.304	8 27 0.0	1.77	6 9 46.4	10 48 32.30	0.300	8 27 17.2	1.75
7	10 48 28.04	0.298	8 27 42.1	1.73	7 9 42.4	10 48 25.16	0.295	8 27 58.8	1.71
8	10 48 20.97	0.292	8 28 23.2	1.69	8 9 38.3	10 48 18.17	0.289	8 28 39.4	1.67
9	10 48 14.04	0.286	8 29 3.4	1.65	9 9 34.3	10 48 11.32	0.283	8 29 19.1	1.63
10	10 48 7.25	0.280	8 29 42.6	1.62	10 9 30.3	10 48 4.61	0.277	8 29 57.9	1.60
11	10 48 0.62	0.273	8 30 20.9	1.58	11 9 26.2	10 47 58.05	0.271	8 30 35.8	1.56
12	10 47 54.13	0.267	8 30 58.4	1.54	12 9 22.2	10 47 51.64	0.264	8 31 12.7	1.52
13	10 47 47.79	0.260	8 31 34.8	1.50	13 9 18.1	10 47 45.36	0.258	8 31 48.6	1.47
14	10 47 41.62	0.254	8 32 10.2	1.45	14 9 14.1	10 47 39.28	0.251	8 32 23.5	1.43
15	10 47 35.59	0.247	8 32 44.6	1.41	15 9 10.1	10 47 33.34	0.244	8 32 57.4	1.39
16	10 47 29.73	0.241	8 33 18.0	1.37	16 9 6.1	10 47 27.55	0.238	8 33 30.4	1.35
17	10 47 24.03	0.234	8 33 50.5	1.33	17 9 2.0	10 47 21.92	0.231	8 34 2.3	1.31
18	10 47 18.49	0.227	8 34 21.8	1.28	18 8 58.0	10 47 16.47	0.223	8 34 33.2	1.26
19	10 47 13.13	0.220	8 34 52.1	1.24	19 8 54.0	10 47 11.18	0.217	8 35 3.0	1.22
20	10 47 7.93	0.213	8 35 21.3	1.20	20 8 50.0	10 47 6.05	0.210	8 35 31.8	1.18
21	10 47 2.90	0.205	8 35 49.6	1.15	21 8 45.9	10 47 1.10	0.202	8 35 59.6	1.13
22	10 46 58.04	0.198	8 36 16.7	1.11	22 8 41.9	10 46 56.32	0.195	8 36 26.2	1.08
23	10 46 53.36	0.191	8 36 42.7	1.06	23 8 37.9	10 46 51.72	0.188	8 36 51.7	1.04
24	10 46 48.86	0.184	8 37 7.5	1.01	24 8 33.9	10 46 47.29	0.181	8 37 16.1	0.99
25	10 46 44.53	0.177	8 37 31.3	0.97	25 8 29.9	10 46 43.05	0.173	8 37 39.4	0.95
26	10 46 40.39	0.169	8 37 54.0	0.92	26 8 25.9	10 46 38.98	0.166	8 38 1.6	0.90
27	10 46 36.43	0.161	8 38 15.5	0.87	27 8 21.9	10 46 35.09	0.158	8 38 22.7	0.85
28	10 46 32.66	0.153	8 38 35.8	0.82	28 8 17.9	10 46 31.40	0.150	8 38 42.6	0.80
29	10 46 29.07	0.145	8 38 55.0	0.77	29 8 13.9	10 46 27.89	0.142	8 39 1.3	0.76
30	10 46 25.68	0.137	8 39 13.0	0.73	30 8 9.9	10 46 24.56	0.134	8 39 18.9	0.71
31	10 46 22.47	-0.129	+8 39 29.9	+0.68	31 8 6.0	10 46 21.43	-0.126	+8 39 35.3	+0.66

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	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
May 1	h m s	s	° ' "	"	d h m	h m s	s	° ' "	"
2	10 46 22.47	-0.129	+8 39' 29.9	+0.68	1 8 6.0	10 46 21.43	-0.126	+8 39' 35.3	+0.66
3	10 46 19.45	0.121	8 39 45.6	0.63	2 8 2.0	10 46 18.49	0.118	8 39 50.5	0.61
4	10 46 16.63	0.113	8 40 0.1	0.58	3 7 58.0	10 46 15.74	0.110	8 40 4.6	0.56
5	10 46 14.00	0.105	8 40 13.4	0.53	4 7 54.0	10 46 13.18	0.102	8 40 17.5	0.51
6	10 46 11.56	0.097	8 40 25.5	0.48	5 7 50.1	10 46 10.81	0.094	8 40 29.2	0.46
7	10 46 9.32	0.089	8 40 36.4	0.43	6 7 46.1	10 46 8.64	0.086	8 40 39.7	0.41
8	10 46 7.27	0.081	8 40 46.1	0.38	7 7 42.1	10 46 6.66	0.078	8 40 49.0	0.36
9	10 46 5.43	0.072	8 40 54.7	0.33	8 7 38.2	10 46 4.88	0.070	8 40 57.1	0.31
10	10 46 3.77	0.064	8 41 2.0	0.28	9 7 34.2	10 46 3.29	0.062	8 41 4.0	0.26
11	10 46 2.32	0.056	8 41 8.1	0.23	10 7 30.2	10 46 1.90	0.054	8 41 9.8	0.21
12	10 46 1.06	0.048	8 41 13.0	0.18	11 7 26.3	10 46 0.70	0.046	8 41 14.3	0.16
13	10 46 0.00	0.040	8 41 16.7	0.13	12 7 22.3	10 45 59.71	0.038	8 41 17.6	0.11
14	10 45 59.14	0.032	8 41 19.2	0.08	13 7 18.4	10 45 58.91	0.029	8 41 19.7	0.06
15	10 45 58.47	0.024	8 41 20.5	+0.03	14 7 14.5	10 45 58.31	0.021	8 41 20.7	+0.01
16	10 45 58.01	0.015	8 41 20.6	-0.02	15 7 10.5	10 45 57.91	0.013	8 41 20.4	-0.04
17	10 45 57.75	-0.007	8 41 19.5	0.07	16 7 6.6	10 45 57.71	-0.004	8 41 18.9	0.09
18	10 45 57.68	+0.001	8 41 17.1	0.12	17 7 2.7	10 45 57.70	+0.004	8 41 16.2	0.14
19	10 45 57.81	0.010	8 41 13.5	0.17	18 6 58.7	10 45 57.89	0.012	8 41 12.3	0.19
20	10 45 58.15	0.018	8 41 8.7	0.22	19 6 54.8	10 45 58.28	0.021	8 41 7.1	0.24
21	10 45 58.69	0.026	8 41 2.7	0.27	20 6 50.9	10 45 58.88	0.029	8 41 0.8	0.29
22	10 45 59.42	0.035	8 40 55.5	0.32	21 6 47.0	10 45 59.67	0.037	8 40 53.3	0.34
23	10 46 0.36	0.044	8 40 47.1	0.38	22 6 43.0	10 46 0.66	0.046	8 40 44.5	0.39
24	10 46 1.50	0.052	8 40 37.5	0.43	23 6 39.1	10 46 1.85	0.054	8 40 34.5	0.44
25	10 46 2.84	0.060	8 40 26.6	0.48	24 6 35.2	10 46 3.25	0.062	8 40 23.3	0.49
26	10 46 4.39	0.068	8 40 14.5	0.53	25 6 31.3	10 46 4.84	0.070	8 40 10.9	0.54
27	10 46 6.13	0.076	8 40 1.1	0.58	26 6 27.4	10 46 6.63	0.078	8 39 57.3	0.59
28	10 46 8.07	0.085	8 39 46.6	0.63	27 6 23.5	10 46 8.63	0.087	8 39 42.5	0.64
29	10 46 10.22	0.093	8 39 30.8	0.68	28 6 19.7	10 46 10.82	0.095	8 39 26.5	0.69
30	10 46 12.57	0.101	8 39 13.9	0.73	29 6 15.8	10 46 13.21	0.104	8 39 9.2	0.74
31	10 46 15.11	0.110	8 38 55.7	0.78	30 6 11.9	10 46 15.80	0.112	8 38 50.8	0.79
June 1	10 46 17.86	0.118	8 38 36.3	0.83	31 6 8.0	10 46 18.59	0.120	8 38 31.2	0.84
2	10 46 20.80	0.127	8 38 15.8	0.88	1 6 4.1	10 46 21.57	0.128	8 38 10.4	0.89
3	10 46 23.94	0.135	8 37 54.0	0.93	2 6 0.2	10 46 24.75	0.137	8 37 48.4	0.94
4	10 46 27.28	0.143	8 37 31.0	0.98	3 5 56.3	10 46 28.13	0.145	8 37 25.3	0.99
5	10 46 30.81	0.151	8 37 7.0	1.03	4 5 52.5	10 46 31.70	0.153	8 37 0.9	1.04
6	10 46 34.54	0.160	8 36 41.7	1.08	5 5 48.6	10 46 35.47	0.161	8 36 35.4	1.08
7	10 46 38.46	0.168	8 36 15.3	1.12	6 5 44.7	10 46 39.43	0.169	8 36 8.8	1.13
8	10 46 42.58	0.176	8 35 47.7	1.17	7 5 40.9	10 46 43.58	0.177	8 35 41.0	1.18
9	10 46 46.88	0.184	8 35 19.0	1.22	8 5 37.0	10 46 47.92	0.185	8 35 12.1	1.23
10	10 46 51.38	0.191	8 34 49.1	1.27	9 5 33.1	10 46 52.44	0.192	8 34 42.0	1.28
11	10 46 56.06	0.199	8 34 18.0	1.32	10 5 29.3	10 46 57.16	0.200	8 34 10.8	1.32
12	10 47 0.93	0.206	8 33 45.8	1.36	11 5 25.4	10 47 2.06	0.208	8 33 38.4	1.37
13	10 47 5.99	0.214	8 33 12.6	1.41	12 5 21.6	10 47 7.14	0.215	8 33 5.0	1.41
14	10 47 11.23	0.222	8 32 38.2	1.46	13 5 17.8	10 47 12.41	0.223	8 32 30.5	1.46
15	10 47 16.66	0.230	8 32 2.7	1.50	14 5 13.9	10 47 17.87	0.231	8 31 54.8	1.51
16	10 47 22.27	0.237	8 31 26.1	1.55	15 5 10.1	10 47 23.50	0.238	8 31 18.0	1.55
17	10 47 28.06	0.245	8 30 48.3	1.59	16 5 6.2	10 47 29.32	0.246	8 30 40.2	1.60
18	10 47 34.04	0.253	8 30 9.6	1.64	17 5 2.4	10 47 35.32	0.253	8 30 1.3	1.64
19	10 47 40.19	0.260	8 29 29.7	1.68	18 4 58.6	10 47 41.49	0.261	8 29 21.3	1.69
20	10 47 46.53	0.267	8 28 48.8	1.73	19 4 54.7	10 47 47.85	0.268	8 28 40.3	1.73
21	10 47 53.04	0.275	8 28 6.7	1.77	20 4 50.9	10 47 54.38	0.276	8 27 58.1	1.78
22	10 47 59.73	0.282	8 27 23.6	1.82	21 4 47.1	10 48 1.09	0.283	8 27 14.9	1.82
23	10 48 6.59	0.290	8 26 39.5	1.86	22 4 43.3	10 48 7.97	0.291	8 26 30.7	1.86
24	10 48 13.63	0.297	8 25 54.3	1.90	23 4 39.5	10 48 15.02	0.298	8 25 45.4	1.91
25	10 48 20.84	0.304	8 25 8.1	1.95	24 4 35.7	10 48 22.24	0.305	8 24 59.1	1.95
26	10 48 28.22	0.311	8 24 20.8	1.99	25 4 31.9	10 48 29.64	0.311	8 24 11.8	1.99
27	10 48 35.77	0.318	8 23 32.5	2.03	26 4 28.1	10 48 37.20	0.318	8 23 23.5	2.03
28	10 48 43.49	0.325	8 22 43.3	2.07	27 4 24.3	10 48 44.93	0.325	8 22 34.2	2.07
29	10 48 51.38	0.331	8 21 53.1	2.11	28 4 20.5	10 48 52.82	0.332	8 21 43.9	2.11
30	10 48 59.42	0.338	8 21 1.8	2.16	29 4 16.7	10 49 0.87	0.338	8 20 52.6	2.16
31	10 49 7.63	0.345	8 20 9.6	2.20	30 4 12.9	10 49 0.99	0.345	8 20 0.3	2.20
31	10 49 16.00	+0.351	+8 19 16.3	-2.24	31 4 9.1	10 49 17.46	+0.352	+8 19 7.0	-2.24

Date.		FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.					
1881.		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.	
July 1		h m s	s	° ' "	" "	d h m	h m s	s	° ' "	" "	
2		10 49 16.00	+0.351	+8 19' 16.3	-2.24	1 4 9.1	10 49 17.46	+0.352	+8 19' 7.0	-2.24	
3		10 49 24.52	0.358	8 18 22.2	2.27	2 4 5.3	10 49 25.99	0.359	8 18 12.9	2.28	
4		10 49 33.21	0.365	8 17 27.2	2.31	3 4 1.5	10 49 34.68	0.365	8 17 17.8	2.31	
5		10 49 42.04	0.371	8 16 31.2	2.35	4 3 57.7	10 49 43.52	0.371	8 16 21.8	2.35	
6		10 49 51.03	0.378	8 15 34.2	2.39	5 3 53.9	10 49 52.51	0.378	8 15 24.9	2.39	
7		10 50 0.17	0.384	8 14 36.4	2.43	6 3 50.1	10 50 1.65	0.384	8 14 27.1	2.43	
8		10 50 9.46	0.390	8 13 37.7	2.46	7 3 46.4	10 50 10.93	0.390	8 13 28.4	2.46	
9		10 50 18.89	0.396	8 12 38.2	2.50	8 3 42.6	10 50 20.36	0.396	8 12 28.9	2.50	
10		10 50 28.47	0.402	8 11 37.7	2.54	9 3 38.8	10 50 29.93	0.402	8 11 28.5	2.54	
11		10 50 38.18	0.408	8 10 36.4	2.57	10 3 35.0	10 50 39.65	0.408	8 10 27.2	2.57	
12		10 50 48.04	0.414	8 9 34.3	2.61	11 3 31.3	10 50 49.50	0.413	8 9 25.1	2.60	
13		10 50 58.04	0.420	8 8 31.3	2.64	12 3 27.5	10 50 59.49	0.419	8 8 22.2	2.64	
14		10 51 8.17	0.426	8 7 27.6	2.67	13 3 23.7	10 51 9.61	0.425	8 7 18.5	2.67	
15		10 51 18.43	0.431	8 6 23.0	2.71	14 3 20.0	10 51 19.87	0.430	8 6 14.0	2.71	
16		10 51 28.82	0.436	8 5 17.6	2.74	15 3 16.2	10 51 30.25	0.435	8 5 8.6	2.74	
17		10 51 39.35	0.441	8 4 11.4	2.77	16 3 12.5	10 51 40.76	0.440	8 4 2.4	2.77	
18		10 51 50.00	0.446	8 3 4.4	2.80	17 3 8.7	10 51 51.41	0.446	8 2 55.6	2.80	
19		10 52 0.78	0.451	8 1 56.7	2.84	18 3 5.0	10 52 2.18	0.451	8 1 48.0	2.83	
20		10 52 11.69	0.456	8 0 48.3	2.87	19 3 1.2	10 52 13.07	0.456	8 0 39.6	2.87	
21		10 52 22.72	0.462	7 59 39.0	2.90	20 2 57.5	10 52 24.09	0.461	7 59 30.4	2.90	
22		10 52 33.86	0.467	7 58 29.0	2.93	21 2 53.7	10 52 35.22	0.466	7 58 20.5	2.93	
23		10 52 45.13	0.472	7 57 18.4	2.96	22 2 50.0	10 52 46.47	0.471	7 57 10.0	2.95	
24		10 52 56.52	0.476	7 56 7.0	2.99	23 2 46.2	10 52 57.84	0.476	7 55 58.8	2.98	
25		10 53 8.01	0.481	7 54 55.0	3.02	24 2 42.5	10 53 9.32	0.480	7 54 46.8	3.01	
26		10 53 19.62	0.486	7 53 42.2	3.05	25 2 38.7	10 53 20.91	0.485	7 53 34.2	3.04	
27		10 53 31.33	0.490	7 52 28.8	3.07	26 2 35.0	10 53 32.60	0.489	7 52 20.9	3.07	
28		10 53 43.16	0.495	7 51 14.8	3.09	27 2 31.3	10 53 44.40	0.494	7 51 7.0	3.09	
29		10 53 55.08	0.499	7 50 0.2	3.12	28 2 27.5	10 53 56.31	0.498	7 49 52.5	3.12	
30		10 54 7.11	0.503	7 48 44.9	3.15	29 2 23.8	10 54 8.32	0.502	7 48 37.4	3.14	
31		10 54 19.24	0.507	7 47 29.0	3.17	30 2 20.1	10 54 20.42	0.506	7 47 21.6	3.17	
Aug. 1		10 54 31.46	0.511	7 46 12.6	3.20	31 2 16.3	10 54 32.62	0.510	7 46 5.3	3.19	
2		10 54 43.78	0.514	7 44 55.6	3.22	1 2 12.6	10 54 44.92	0.514	7 44 48.5	2.21	
3		10 54 56.19	0.519	7 43 38.0	3.24	2 2 8.9	10 54 57.31	0.518	7 43 31.1	3.24	
4		10 55 8.69	0.523	7 42 19.9	3.26	3 2 5.2	10 55 9.78	0.522	7 42 13.1	3.26	
5		10 55 21.27	0.526	7 41 1.3	3.29	4 2 1.4	10 55 22.34	0.525	7 40 54.6	3.28	
6		10 55 33.94	0.529	7 39 42.2	3.31	5 1 57.7	10 55 34.98	0.529	7 39 35.7	3.30	
7		10 55 46.68	0.533	7 38 22.6	3.32	6 1 54.0	10 55 47.70	0.532	7 38 16.3	3.32	
8		10 55 59.51	0.536	7 37 2.5	3.34	7 1 50.3	10 56 0.50	0.535	7 36 56.4	3.34	
9		10 56 12.41	0.539	7 35 42.0	3.37	8 1 46.6	10 56 13.37	0.538	7 35 36.0	3.36	
10		10 56 25.39	0.542	7 34 21.0	3.38	9 1 42.8	10 56 26.32	0.541	7 34 15.1	3.38	
11		10 56 38.44	0.545	7 32 59.5	3.40	10 1 39.1	10 56 39.34	0.544	7 32 53.8	3.40	
12		10 56 51.55	0.548	7 31 37.6	3.42	11 1 35.4	10 56 52.43	0.547	7 31 32.2	3.41	
13		10 57 4.74	0.551	7 30 15.4	3.44	12 1 31.7	10 57 5.58	0.550	7 30 10.1	3.43	
14		10 57 17.99	0.554	7 28 52.7	3.45	13 1 28.0	10 57 18.80	0.553	7 28 47.6	3.45	
15		10 57 31.30	0.556	7 27 29.6	3.47	14 1 24.3	10 57 32.08	0.555	7 27 24.7	3.46	
16		10 57 44.68	0.559	7 26 6.1	3.48	15 1 20.6	10 57 45.43	0.558	7 26 1.4	3.47	
17		10 57 58.11	0.561	7 24 42.4	3.50	16 1 16.9	10 57 58.83	0.560	7 24 37.9	3.49	
18		10 58 11.60	0.563	7 23 18.3	3.51	17 1 13.1	10 58 12.29	0.562	7 23 14.0	3.50	
19		10 58 25.14	0.565	7 21 53.9	3.52	18 1 9.4	10 58 25.80	0.564	7 21 49.8	3.52	
20		10 58 38.73	0.567	7 20 29.1	3.54	19 1 5.7	10 58 39.36	0.565	7 20 25.2	3.53	
21		10 58 52.37	0.569	7 19 4.0	3.55	20 1 2.0	10 58 52.97	0.567	7 19 0.3	3.54	
22		10 59 6.06	0.571	7 17 38.7	3.56	21 0 58.3	10 59 6.62	0.569	7 17 35.3	3.55	
23		10 59 19.79	0.573	7 16 13.2	3.57	22 0 54.6	10 59 20.31	0.571	7 16 10.0	3.56	
24		10 59 33.56	0.574	7 14 47.4	3.58	23 0 50.9	10 59 34.05	0.573	7 14 44.4	3.57	
25		10 59 47.37	0.576	7 13 21.3	3.59	24 0 47.2	10 59 47.82	0.574	7 13 18.5	3.58	
26		11 0 1.21	0.577	7 11 55.0	3.60	25 0 43.5	11 0 1.63	0.575	7 11 52.4	3.59	
27		11 0 15.08	0.578	7 10 28.6	3.60	26 0 39.8	11 0 15.46	0.577	7 10 26.2	3.59	
28		11 0 28.98	0.579	7 9 2.1	3.61	27 0 36.1	11 0 29.33	0.578	7 8 59.9	3.60	
29		11 0 42.91	0.580	7 7 35.3	3.62	28 0 32.4	11 0 43.23	0.579	7 7 33.4	3.61	
30		11 0 56.87	0.581	7 6 8.4	3.62	29 0 28.7	11 0 57.15	0.580	7 6 6.7	3.61	
31		11 1 10.84	0.582	7 4 41.4	3.63	30 0 25.0	11 1 11.09	0.580	7 4 39.9	3.62	
32		11 1 24.83	+0.583	+7 3 14.3	-3.63	31 0 21.3	11 1 25.04	+0.581	+7 3 13.0	-3.62	

Date. 1881.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
Sept. 1	h m s	s	° ' "	"	d h m	h m s	s	° ' "	"
2	11 1 38.84	+0.583	+7 1 47.1	-3.64	1 0 17.6	11 1 39.01	+0.582	+7 1 46.1	-3.62
3	11 1 52.85	0.584	7 0 19.8	3.64	2 0 13.9	11 1 52.99	0.582	7 0 19.0	3.63
4	11 2 6.88	0.584	6 58 52.5	3.64	3 0 10.2	11 2 6.98	0.583	6 58 51.9	3.63
5	11 2 20.91	0.584	6 57 25.0	3.64	4 0 6.5	11 2 20.98	0.583	6 57 24.7	3.63
6	11 2 34.95	0.585	6 55 57.7	3.64	5 0 2.8	11 2 34.98	0.583	6 55 57.5	3.63
7					5 23 59.1	11 2 48.98	0.563	6 54 30.4	3.63
8	11 2 48.99	0.585	6 54 30.3	3.64	6 23 55.4	11 3 2.99	0.583	6 53 3.2	3.63
9	11 3 3.03	0.585	6 53 2.9	3.64	7 23 51.7	11 3 16.99	0.583	6 51 36.0	3.63
10	11 3 17.07	0.584	6 51 35.5	3.64	8 23 48.0	11 3 30.99	0.583	6 50 8.9	3.63
11	11 3 31.11	0.584	6 50 8.2	3.64	9 23 44.3	11 3 44.98	0.582	6 48 41.9	3.62
12	11 3 45.13	0.584	6 48 41.0	3.63	10 23 40.6	11 3 58.96	0.582	6 47 15.0	3.62
13	11 3 59.15	0.583	6 47 13.8	3.63	11 23 36.9	11 4 12.93	0.581	6 45 48.1	3.62
14	11 4 13.15	0.583	6 45 46.7	3.63	12 23 33.2	11 4 26.88	0.580	6 44 21.3	3.61
15	11 4 27.14	0.582	6 44 19.7	3.62	13 23 29.5	11 4 40.81	0.580	6 42 54.6	3.61
16	11 4 41.11	0.582	6 42 52.8	3.62	14 23 25.8	11 4 54.73	0.579	6 41 28.1	3.60
17	11 4 55.06	0.581	6 41 26.1	3.61	15 23 22.1	11 5 8.62	0.578	6 40 1.8	3.59
18	11 5 8.98	0.580	6 39 59.5	3.60	16 23 18.4	11 5 22.48	0.577	6 38 35.6	3.59
19	11 5 22.88	0.578	6 38 33.1	3.59	17 23 14.7	11 5 36.32	0.576	6 37 9.5	3.58
20	11 5 36.75	0.577	6 37 6.8	3.59	18 23 11.0	11 5 50.13	0.574	6 35 43.7	3.57
21	11 5 50.60	0.576	6 35 40.7	3.58	19 23 7.3	11 6 3.90	0.573	6 34 18.1	3.56
22	11 6 4.41	0.574	6 34 15.0	3.57	20 23 3.6	11 6 17.64	0.571	6 32 52.8	3.55
23	11 6 18.18	0.573	6 32 49.5	3.56	21 22 59.9	11 6 31.34	0.569	6 31 27.7	3.54
24	11 6 31.91	0.571	6 31 24.2	3.55	22 22 56.2	11 6 45.00	0.567	6 30 2.8	3.53
25	11 6 45.60	0.569	6 29 59.1	3.54	23 22 52.5	11 6 58.61	0.565	6 28 38.3	3.51
26	11 6 59.24	0.567	6 28 34.3	3.52	24 22 48.8	11 7 12.17	0.563	6 27 14.1	3.50
27	11 7 12.84	0.565	6 27 10.0	3.51	25 22 45.1	11 7 25.68	0.561	6 25 50.3	3.49
28	11 7 26.38	0.563	6 25 45.9	3.50	26 22 41.4	11 7 39.14	0.559	6 24 26.7	3.48
29	11 7 39.87	0.561	6 24 22.2	3.48	27 22 37.7	11 7 52.54	0.557	6 23 3.5	3.46
30	11 7 53.31	0.559	6 22 58.8	3.47	28 22 34.0	11 8 5.88	0.555	6 21 40.7	3.44
Oct. 1	11 8 6.68	0.556	6 21 35.8	3.45	29 22 30.2	11 8 19.16	0.552	6 20 18.4	3.42
2	11 8 19.99	0.554	6 20 13.3	3.43	30 22 26.5	11 8 32.37	0.549	6 18 56.5	3.40
3	11 8 33.23	0.551	6 18 51.2	3.41	1 22 22.8	11 8 45.51	0.546	6 17 35.0	3.39
4	11 8 46.40	0.548	6 17 29.5	3.39	2 22 19.1	11 8 58.59	0.543	6 16 13.9	3.37
5	11 8 59.50	0.545	6 16 8.2	3.37	3 22 15.4	11 9 11.59	0.541	6 14 53.3	3.35
6	11 9 12.54	0.542	6 14 47.4	3.35	4 22 11.7	11 9 24.52	0.538	6 13 33.3	3.33
7	11 9 25.50	0.538	6 13 27.2	3.33	5 22 8.0	11 9 37.38	0.534	6 12 13.7	3.31
8	11 9 38.38	0.535	6 12 7.5	3.31	6 22 4.2	11 9 50.15	0.531	6 10 54.6	3.29
9	11 9 51.17	0.532	6 10 48.2	3.29	7 22 0.5	11 10 2.84	0.527	6 9 36.0	3.26
10	11 10 3.89	0.528	6 9 29.4	3.27	8 21 56.8	11 10 15.45	0.524	6 8 17.9	3.24
11	11 10 16.52	0.525	6 8 11.2	3.25	9 21 53.1	11 10 27.97	0.520	6 7 0.4	3.22
12	11 10 29.07	0.521	6 6 53.6	3.22	10 21 49.3	11 10 40.40	0.516	6 5 43.5	3.19
13	11 10 41.53	0.517	6 5 36.6	3.20	11 21 45.6	11 10 52.74	0.512	6 4 27.2	3.17
14	11 10 53.89	0.513	6 4 20.1	3.17	12 21 41.9	11 11 4.98	0.508	6 3 11.5	3.14
15	11 11 6.16	0.509	6 3 4.3	3.15	13 21 38.2	11 11 17.13	0.504	6 1 56.4	3.11
16	11 11 18.33	0.505	6 1 49.0	3.12	14 21 34.4	11 11 29.18	0.500	6 0 42.0	3.08
17	11 11 30.40	0.501	6 0 34.5	3.09	15 21 30.7	11 11 41.13	0.495	5 59 23.3	3.06
18	11 11 42.36	0.496	5 59 20.7	3.06	16 21 27.0	11 11 52.97	0.491	5 58 15.2	3.03
19	11 11 54.22	0.492	5 58 7.5	3.03	17 21 23.2	11 12 4.70	0.487	5 57 2.8	3.00
20	11 12 5.97	0.487	5 56 55.0	3.01	18 21 19.5	11 12 16.33	0.482	5 55 51.1	2.97
21	11 12 17.62	0.483	5 55 43.1	2.98	19 21 15.7	11 12 27.84	0.477	5 54 40.2	2.94
22	11 12 29.15	0.478	5 54 32.1	2.94	20 21 12.0	11 12 39.23	0.472	5 53 30.0	2.91
23	11 12 40.56	0.473	5 53 21.9	2.91	21 21 8.2	11 12 50.51	0.467	5 52 20.6	2.88
24	11 12 51.85	0.468	5 52 12.4	2.88	22 21 4.5	11 13 1.67	0.462	5 51 11.9	2.85
25	11 13 3.02	0.463	5 51 3.6	2.85	23 21 0.7	11 13 12.70	0.457	5 50 4.0	2.81
26	11 13 14.07	0.457	5 49 55.6	2.81	24 20 57.0	11 13 23.61	0.451	5 48 57.0	2.77
27	11 13 24.99	0.452	5 48 48.6	2.78	25 20 53.2	11 13 34.39	0.446	5 47 50.8	2.74
28	11 13 35.78	0.447	5 47 42.3	2.74	26 20 49.5	11 13 45.04	0.440	5 46 45.4	2.71
29	11 13 46.44	0.441	5 46 36.9	2.71	27 20 45.7	11 13 55.55	0.435	5 45 40.9	2.67
30	11 13 56.96	0.436	5 45 32.3	2.67	28 20 42.0	11 14 5.92	0.430	5 44 37.3	2.63
31	11 14 7.34	0.430	5 44 28.6	2.63	29 20 38.2	11 14 16.16	0.424	5 43 34.6	2.60
32	11 14 17.59	0.424	5 43 25.8	2.59	30 20 34.5	11 14 26.26	0.418	5 42 32.7	2.56
33	11 14 27.69	+0.418	+5 42 24.0	-2.56	31 20 30.7	11 14 36.22	+0.412	+5 41 31.8	-2.52

Date. 1881.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.					
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.	
	^h ^m ^s	^s	[°] ['] ["]		^d ^h ^m	^h ^m ^s	^s	[°] ['] ["]		
Nov. 1	11 14 37.65	+0.412	+5 41' 23.0	-2.52	1 20 26.9	11 14 46.03	+0.406	+5 40' 31.8	-2.48	
2	11 14 47.47	0.406	5 40 23.0	2.48	2 20 23.2	11 14 55.70	0.400	5 39 32.7	2.44	
3	11 14 57.14	0.400	5 39 23.9	2.44	3 20 19.4	11 15 5.21	0.393	5 38 34.7	2.41	
4	11 15 6.66	0.393	5 38 25.9	2.40	4 20 15.6	11 15 14.58	0.387	5 37 37.6	2.36	
5	11 15 16.03	0.387	5 37 28.8	2.36	5 20 11.8	11 15 23.79	0.381	5 36 41.4	2.32	
6	11 15 25.24	0.381	5 36 32.6	2.32	6 20 8.1	11 15 32.85	0.374	5 35 46.3	2.28	
7	11 15 34.30	0.374	5 35 37.4	2.28	7 20 4.3	11 15 41.76	0.368	5 34 52.1	2.24	
8	11 15 43.20	0.367	5 34 43.3	2.23	8 20 0.5	11 15 50.50	0.361	5 33 59.0	2.19	
9	11 15 51.94	0.361	5 33 50.3	2.19	9 19 56.7	11 15 59.09	0.354	5 33 6.9	2.15	
10	11 16 0.52	0.354	5 32 58.2	2.15	10 19 52.9	11 16 7.51	0.347	5 32 15.9	2.10	
11	11 16 8.94	0.347	5 32 7.2	2.10	11 19 49.1	11 16 15.77	0.340	5 31 25.9	2.06	
12	11 16 17.19	0.340	5 31 17.3	2.06	12 19 45.3	11 16 23.85	0.333	5 30 37.0	2.01	
13	11 16 25.27	0.333	5 30 28.4	2.01	13 19 41.5	11 16 31.77	0.326	5 29 49.2	1.97	
14	11 16 33.18	0.326	5 29 40.7	1.97	14 19 37.7	11 16 39.52	0.319	5 29 2.5	1.92	
15	11 16 40.92	0.319	5 28 54.1	1.92	15 19 33.9	11 16 47.10	0.312	5 28 16.9	1.87	
16	11 16 48.49	0.312	5 28 8.6	1.87	16 19 30.1	11 16 54.51	0.305	5 27 32.5	1.83	
17	11 16 55.88	0.305	5 27 24.2	1.82	17 19 26.3	11 17 1.73	0.297	5 26 49.2	1.78	
18	11 17 3.09	0.297	5 26 41.0	1.78	18 19 22.4	11 17 8.78	0.290	5 26 7.0	1.73	
19	11 17 10.12	0.289	5 25 59.0	1.73	19 19 18.6	11 17 15.64	0.282	5 25 26.0	1.68	
20	11 17 16.96	0.282	5 25 18.1	1.68	20 19 14.8	11 17 22.32	0.275	5 24 46.1	1.63	
21	11 17 23.63	0.274	5 24 38.4	1.63	21 19 11.0	11 17 28.82	0.267	5 24 7.5	1.58	
22	11 17 30.10	0.266	5 23 59.9	1.58	22 19 7.2	11 17 35.13	0.259	5 23 30.1	1.53	
23	11 17 36.39	0.258	5 23 22.6	1.53	23 19 3.3	11 17 41.25	0.251	5 22 53.8	1.48	
24	11 17 42.49	0.250	5 22 46.5	1.48	24 18 59.5	11 17 47.19	0.243	5 22 18.8	1.43	
25	11 17 48.40	0.242	5 22 11.6	1.43	25 18 55.7	11 17 52.93	0.235	5 21 45.0	1.38	
26	11 17 54.12	0.234	5 21 38.0	1.38	26 18 51.8	11 17 58.48	0.227	5 21 12.4	1.33	
27	11 17 59.64	0.226	5 21 5.6	1.32	27 18 48.0	11 18 3.83	0.219	5 20 41.1	1.28	
28	11 18 4.97	0.218	5 20 34.5	1.27	28 18 44.1	11 18 8.99	0.211	5 20 11.0	1.23	
29	11 18 10.10	0.209	5 20 4.6	1.22	29 18 40.3	11 18 13.96	0.202	5 19 42.2	1.18	
30	11 18 15.04	0.201	5 19 36.0	1.17	30 18 36.4	11 18 18.73	0.194	5 19 14.6	1.12	
Dec. 1	11 18 19.78	0.193	5 19 8.6	1.11	1 18 32.6	11 18 23.30	0.186	5 18 48.3	1.07	
2	11 18 24.32	0.185	5 18 42.5	1.06	2 18 28.7	11 18 27.67	0.178	5 18 23.3	1.02	
3	11 18 28.65	0.177	5 18 17.7	1.01	3 18 24.9	11 18 31.84	0.170	5 17 59.5	0.96	
4	11 18 32.79	0.169	5 17 54.2	0.95	4 18 21.0	11 18 35.82	0.162	5 17 37.0	0.91	
5	11 18 36.73	0.160	5 17 31.9	0.90	5 18 17.1	11 18 39.59	0.153	5 17 15.8	0.86	
6	11 18 40.46	0.152	5 17 11.0	0.85	6 18 13.2	11 18 43.16	0.145	5 16 55.9	0.80	
7	11 18 44.00	0.143	5 16 51.3	0.79	7 18 9.4	11 18 46.53	0.136	5 16 37.3	0.75	
8	11 18 47.32	0.134	5 16 33.0	0.73	8 18 5.5	11 18 49.70	0.128	5 16 20.0	0.69	
9	11 18 50.44	0.126	5 16 16.0	0.68	9 18 1.6	11 18 52.66	0.119	5 16 4.0	0.64	
10	11 18 53.36	0.117	5 16 0.3	0.63	10 17 57.7	11 18 55.41	0.110	5 15 49.4	0.58	
11	11 18 56.07	0.108	5 15 45.9	0.57	11 17 53.8	11 18 57.96	0.101	5 15 36.0	0.53	
12	11 18 58.58	0.100	5 15 32.8	0.52	12 17 49.9	11 19 0.30	0.093	5 15 23.9	0.47	
13	11 19 0.87	0.091	5 15 21.0	0.46	13 17 46.0	11 19 2.44	0.084	5 15 13.2	0.42	
14	11 19 2.96	0.082	5 15 10.6	0.41	14 17 42.1	11 19 4.36	0.075	5 15 3.8	0.36	
15	11 19 4.84	0.073	5 15 1.6	0.35	15 17 38.2	11 19 6.08	0.067	5 14 55.7	0.30	
16	11 19 6.50	0.065	5 14 53.8	0.29	16 17 34.3	11 19 7.59	0.059	5 14 49.0	0.25	
17	11 19 7.96	0.057	5 14 47.4	0.24	17 17 30.4	11 19 8.89	0.050	5 14 43.6	0.20	
18	11 19 9.20	0.048	5 14 42.4	0.18	18 17 26.5	11 19 9.97	0.041	5 14 39.5	0.14	
19	11 19 10.34	0.039	5 14 38.6	0.13	19 17 22.6	11 19 10.85	0.033	5 14 36.8	0.09	
20	11 19 11.06	0.030	5 14 36.2	0.07	20 17 18.7	11 19 11.52	0.024	5 14 35.3	-0.03	
21	11 19 11.67	0.021	5 14 35.2	-0.02	21 17 14.7	11 19 11.98	0.015	5 14 35.2	+0.02	
22	11 19 12.07	0.012	5 14 35.5	+0.04	22 17 10.8	11 19 12.23	+0.006	5 14 36.5	0.08	
23	11 19 12.26	+0.003	5 14 37.1	0.09	23 17 6.9	11 19 12.27	-0.003	5 14 39.1	0.13	
24	11 19 12.24	-0.006	5 14 40.1	0.15	24 17 2.9	11 19 12.09	0.012	5 14 43.0	0.19	
25	11 19 12.00	0.014	5 14 44.4	0.21	25 16 59.0	11 19 11.71	0.020	5 14 48.2	0.24	
26	11 19 11.56	0.023	5 14 50.0	0.26	26 16 55.1	11 19 11.12	0.029	5 14 54.7	0.30	
27	11 19 10.91	0.032	5 14 56.9	0.32	27 16 51.1	11 19 10.33	0.037	5 15 2.6	0.35	
28	11 19 10.05	0.041	5 15 5.2	0.37	28 16 47.2	11 19 9.33	0.046	5 15 11.7	0.41	
29	11 19 8.98	0.049	5 15 14.8	0.42	29 16 43.2	11 19 8.12	0.055	5 15 22.2	0.46	
30	11 19 7.71	0.057	5 15 25.6	0.48	30 16 39.3	11 19 6.71	0.063	5 15 33.9	0.51	
31	11 19 6.23	0.065	5 15 37.7	0.53	31 16 35.3	11 19 5.09	0.072	5 15 46.8	0.57	
32	11 19 4.55	-0.074	+5 15 51.1	+0.58	32 16 31.3	11 19 3.27	-0.080	+5 16 1.1	+0.62	

Date. 1881.	FOR WASHINGTON MEAN NOON.					FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.	
Jan. 1	^h 2 ^m 39 ^s 3.11	-0.109	+13 36 31.4	-0.37	^d 1 ^h 7 ^m 51.8	^h 2 ^m 39 ^s 2.25	-0.108	+13 36 25.5	-0.36	
2	2 39 0.52	0.105	13 36 22.8	0.35	2 7 47.8	2 38 59.71	0.103	13 36 20.1	0.34	
3	2 38 58.05	0.100	13 36 14.8	0.32	3 7 43.9	2 38 57.29	0.098	13 36 12.3	0.31	
4	2 38 55.71	0.095	13 36 7.4	0.29	4 7 39.9	2 38 54.99	0.093	13 36 5.2	0.28	
5	2 38 53.49	0.090	13 36 0.7	0.27	5 7 35.9	2 38 52.82	0.088	13 35 58.7	0.26	
6	2 38 51.40	0.084	13 35 54.6	0.24	6 7 32.0	2 38 50.78	0.082	13 35 52.8	0.23	
7	2 38 49.44	0.079	13 35 49.1	0.22	7 7 28.0	2 38 48.87	0.077	13 35 47.5	0.21	
8	2 38 47.61	0.073	13 35 44.2	0.19	8 7 24.0	2 38 47.09	0.072	13 35 42.8	0.18	
9	2 38 45.92	0.068	13 35 40.0	0.16	9 7 20.1	2 38 45.43	0.067	13 35 38.8	0.15	
10	2 38 44.35	0.063	13 35 36.4	0.14	10 7 16.1	2 38 43.90	0.061	13 35 35.4	0.13	
11	2 38 42.91	0.057	13 35 33.5	0.11	11 7 12.2	2 38 42.51	0.055	13 35 32.7	0.11	
12	2 38 41.61	0.051	13 35 31.2	0.09	12 7 8.2	2 38 41.25	0.050	13 35 30.6	0.08	
13	2 38 40.44	0.046	13 35 29.5	0.06	13 7 4.2	2 38 40.12	0.044	13 35 29.1	0.05	
14	2 38 39.40	0.040	13 35 28.5	-0.03	14 7 0.3	2 38 39.13	0.039	13 35 28.3	-0.02	
15	2 38 38.49	0.035	13 35 28.1	0.00	15 6 56.4	2 38 38.27	0.033	13 35 28.1	+0.01	
16	2 38 37.72	0.029	13 35 28.4	+0.03	16 6 52.4	2 38 37.53	0.028	13 35 28.6	0.03	
17	2 38 37.08	0.024	13 35 29.3	0.05	17 6 48.5	2 38 36.93	0.022	13 35 29.7	0.06	
18	2 38 36.58	0.018	13 35 30.9	0.08	18 6 44.5	2 38 36.46	0.017	13 35 31.5	0.09	
19	2 38 36.21	0.013	13 35 33.1	0.11	19 6 40.6	2 38 36.13	0.011	13 35 33.9	0.11	
20	2 38 35.98	0.008	13 35 35.9	0.13	20 6 36.7	2 38 35.94	-0.005	13 35 36.9	0.14	
21	2 38 35.88	-0.002	13 35 39.4	0.16	21 6 32.7	2 38 35.88	0.000	13 35 40.5	0.16	
22	2 38 35.92	+0.004	13 35 43.5	0.19	22 6 28.8	2 38 35.95	+0.006	13 35 44.7	0.19	
23	2 38 36.09	0.010	13 35 48.3	0.22	23 6 24.9	2 38 36.16	0.012	13 35 49.7	0.22	
24	2 38 36.40	0.016	13 35 53.8	0.24	24 6 20.9	2 38 36.51	0.017	13 35 55.3	0.25	
25	2 38 36.85	0.022	13 35 59.9	0.27	25 6 17.0	2 38 36.99	0.023	13 36 1.6	0.28	
26	2 38 37.44	0.027	13 36 6.6	0.29	26 6 13.1	2 38 37.61	0.029	13 36 8.5	0.30	
27	2 38 38.16	0.033	13 36 14.0	0.32	27 6 9.2	2 38 38.37	0.035	13 36 16.0	0.33	
28	2 38 39.02	0.039	13 36 22.0	0.35	28 6 5.3	2 38 39.27	0.040	13 36 24.1	0.35	
29	2 38 40.02	0.045	13 36 30.6	0.37	29 6 1.4	2 38 40.30	0.046	13 36 32.9	0.38	
30	2 38 41.16	0.050	13 36 39.9	0.40	30 5 57.4	2 38 41.47	0.051	13 36 42.3	0.41	
31	2 38 42.43	0.056	13 36 49.8	0.43	31 5 53.5	2 38 42.77	0.057	13 36 52.4	0.43	
Feb. 1	2 38 43.84	0.062	13 37 0.4	0.46	1 5 49.6	2 38 44.21	0.063	13 37 3.1	0.46	
2	2 38 45.39	0.067	13 37 11.6	0.48	2 5 45.7	2 38 45.78	0.069	13 37 14.4	0.48	
3	2 38 47.07	0.073	13 37 23.4	0.51	3 5 41.8	2 38 47.49	0.074	13 37 26.3	0.51	
4	2 38 48.89	0.079	13 37 35.8	0.53	4 5 37.9	2 38 49.34	0.080	13 37 38.8	0.54	
5	2 38 50.84	0.084	13 37 48.9	0.56	5 5 34.0	2 38 51.32	0.085	13 37 52.0	0.57	
6	2 38 52.93	0.090	13 38 2.6	0.58	6 5 30.1	2 38 53.43	0.091	13 38 5.8	0.59	
7	2 38 55.15	0.095	13 38 16.8	0.61	7 5 26.2	2 38 55.67	0.096	13 38 20.1	0.61	
8	2 38 57.50	0.101	13 38 31.7	0.63	8 5 22.3	2 38 58.04	0.102	13 38 35.1	0.64	
9	2 38 59.98	0.106	13 38 47.2	0.66	9 5 18.4	2 39 0.55	0.107	13 38 50.7	0.66	
10	2 39 2.60	0.112	13 39 3.3	0.68	10 5 14.5	2 39 3.19	0.113	13 39 6.9	0.69	
11	2 39 5.35	0.117	13 39 20.0	0.71	11 5 10.6	2 39 5.96	0.118	13 39 23.7	0.71	
12	2 39 8.23	0.122	13 39 37.3	0.73	12 5 6.8	2 39 8.86	0.124	13 39 41.1	0.74	
13	2 39 11.24	0.128	13 39 55.1	0.76	13 5 2.9	2 39 11.89	0.129	13 39 59.0	0.76	
14	2 39 14.37	0.133	13 40 13.6	0.78	14 4 59.0	2 39 15.04	0.134	13 40 17.5	0.79	
15	2 39 17.63	0.139	13 40 32.7	0.81	15 4 55.1	2 39 18.32	0.139	13 40 36.7	0.81	
16	2 39 21.02	0.144	13 40 52.4	0.83	16 4 51.2	2 39 21.73	0.145	13 40 56.4	0.84	
17	2 39 24.54	0.149	13 41 12.6	0.86	17 4 47.4	2 39 25.26	0.150	13 41 16.7	0.86	
18	2 39 28.18	0.154	13 41 33.4	0.88	18 4 43.5	2 39 28.91	0.155	13 41 37.5	0.88	
19	2 39 31.94	0.160	13 41 54.7	0.90	19 4 39.6	2 39 32.69	0.160	13 41 58.9	0.90	
20	2 39 35.83	0.165	13 42 16.6	0.92	20 4 35.8	2 39 36.60	0.165	13 42 20.8	0.93	
21	2 39 39.85	0.170	13 42 39.0	0.95	21 4 31.9	2 39 40.63	0.170	13 42 43.3	0.95	
22	2 39 43.98	0.175	13 43 2.0	0.97	22 4 28.0	2 39 44.77	0.175	13 43 6.3	0.97	
23	2 39 48.23	0.180	13 43 25.5	0.99	23 4 24.2	2 39 49.03	0.180	13 43 29.9	0.99	
24	2 39 52.61	0.185	13 43 49.6	1.01	24 4 20.3	2 39 53.41	0.185	13 43 54.0	1.01	
25	2 39 57.11	0.190	13 44 14.1	1.03	25 4 16.5	2 39 57.92	0.190	13 44 18.5	1.03	
26	2 40 1.73	0.195	13 44 39.1	1.05	26 4 12.6	2 40 2.55	0.195	13 44 43.5	1.05	
27	2 40 6.46	0.199	13 45 4.6	1.07	27 4 8.7	2 40 7.29	0.200	13 45 9.1	1.08	
28	2 40 11.31	0.204	13 45 30.7	1.09	28 4 4.9	2 40 12.14	0.205	13 45 35.2	1.10	
29	2 40 16.27	0.209	13 45 57.2	1.11	29 4 1.1	2 40 17.11	0.210	13 46 1.7	1.12	
30	2 40 21.35	0.214	13 46 24.2	1.13	30 3 57.2	2 40 22.19	0.214	13 46 28.7	1.13	
31	2 40 26.54	+0.218	13 46 51.6	+1.15	31 3 53.4	2 40 27.38	+0.218	13 46 56.1	+1.15	

Date.	FOR WASHINGTON MEAN NOON.					FOR MERIDIAN TRANSIT.				
1881.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.	
Mar. 1	^h 2 ^m 40 ^s 16.27	+0.200	+13° 45' 57.2	+1.11	^d 1 ^h 4 ^m 1.1	^h 2 ^m 40 ^s 17.11	+0.210	+13° 46' 1.7	+1.12	
2	2 40 21.35	0.214	13 46 24.2	1.13	2 3 57.2	2 40 22.19	0.214	13 46 28.7	1.13	
3	2 40 26.54	0.218	13 46 51.6	1.15	3 3 53.4	2 40 27.38	0.218	13 46 56.1	1.15	
4	2 40 31.84	0.223	13 47 19.5	1.17	4 3 49.5	2 40 32.68	0.223	13 47 24.0	1.17	
5	2 40 37.25	0.228	13 47 47.9	1.19	5 3 45.7	2 40 38.09	0.228	13 47 52.4	1.19	
6	2 40 42.76	0.232	13 48 16.8	1.21	6 3 41.9	2 40 43.61	0.232	13 48 21.3	1.21	
7	2 40 48.38	0.236	13 48 46.1	1.23	7 3 38.0	2 40 49.23	0.236	13 48 50.6	1.23	
8	2 40 54.10	0.241	13 49 15.8	1.24	8 3 34.2	2 40 54.96	0.241	13 49 20.2	1.24	
9	2 40 59.93	0.245	13 49 45.9	1.26	9 3 30.3	2 41 0.79	0.245	13 49 50.3	1.26	
10	2 41 5.86	0.249	13 50 16.4	1.28	10 3 26.5	2 41 6.72	0.249	13 50 20.8	1.28	
11	2 41 11.89	0.254	13 50 47.4	1.30	11 3 22.7	2 41 12.75	0.253	13 50 51.8	1.30	
12	2 41 18.03	0.258	13 51 18.9	1.32	12 3 18.8	2 41 18.88	0.257	13 51 23.3	1.32	
13	2 41 24.26	0.261	13 51 50.7	1.33	13 3 15.0	2 41 25.10	0.261	13 51 55.1	1.33	
14	2 41 30.58	0.265	13 52 22.9	1.35	14 3 11.2	2 41 31.42	0.265	13 52 27.2	1.34	
15	2 41 36.99	0.269	13 52 55.4	1.36	15 3 7.4	2 41 37.83	0.269	13 52 59.7	1.36	
16	2 41 43.50	0.273	13 53 28.3	1.38	16 3 3.5	2 41 44.33	0.273	13 53 32.6	1.38	
17	2 41 50.10	0.277	13 54 1.6	1.39	17 2 59.7	2 41 50.93	0.277	13 53 55.8	1.39	
18	2 41 56.79	0.281	13 54 35.2	1.41	18 2 55.9	2 41 57.61	0.280	13 54 39.4	1.41	
19	2 42 3.57	0.284	13 55 9.2	1.42	19 2 52.1	2 42 4.38	0.284	13 55 13.4	1.42	
20	2 42 10.44	0.288	13 55 43.6	1.44	20 2 48.3	2 42 11.24	0.288	13 55 47.7	1.43	
21	2 42 17.39	0.291	13 56 18.3	1.45	21 2 44.4	2 42 18.19	0.291	13 56 22.3	1.45	
22	2 42 24.42	0.295	13 56 53.3	1.46	22 2 40.6	2 42 25.21	0.294	13 56 57.2	1.46	
23	2 42 31.53	0.298	13 57 28.6	1.48	23 2 36.8	2 42 32.31	0.298	13 57 32.4	1.47	
24	2 42 38.73	0.302	13 58 4.2	1.49	24 2 33.0	2 42 39.50	0.301	13 58 8.0	1.49	
25	2 42 46.01	0.305	13 58 40.1	1.50	25 2 29.2	2 42 46.77	0.304	13 58 43.9	1.50	
26	2 42 53.36	0.308	13 59 16.2	1.51	26 2 25.4	2 42 54.11	0.307	13 59 20.0	1.51	
27	2 43 0.79	0.311	13 59 52.6	1.52	27 2 21.6	2 43 1.52	0.311	13 59 56.3	1.52	
28	2 43 8.29	0.314	14 0 29.3	1.53	28 2 17.8	2 43 9.01	0.314	14 0 32.9	1.53	
29	2 43 15.87	0.317	14 1 6.3	1.55	29 2 14.0	2 43 16.57	0.317	14 1 9.8	1.54	
30	2 43 23.51	0.320	14 1 43.6	1.57	30 2 10.1	2 43 24.20	0.320	14 1 47.0	1.55	
31	2 43 31.22	0.323	14 2 21.1	1.58	31 2 6.3	2 43 31.90	0.322	14 2 24.4	1.56	
Apr. 1	2 43 39.00	0.325	14 2 58.8	1.59	1 2 2.5	2 43 39.66	0.325	14 3 2.0	1.57	
2	2 43 46.84	0.328	14 3 36.7	1.59	2 1 58.7	2 43 47.48	0.328	14 3 39.8	1.58	
3	2 43 54.74	0.331	14 4 14.8	1.60	3 1 54.9	2 43 55.37	0.330	14 4 17.8	1.59	
4	2 44 2.70	0.333	14 4 53.1	1.61	4 1 51.1	2 44 3.32	0.332	14 4 56.1	1.60	
5	2 44 10.73	0.336	14 5 31.6	1.62	5 1 47.3	2 44 11.33	0.335	14 5 34.5	1.61	
6	2 44 18.81	0.338	14 6 10.3	1.62	6 1 43.5	2 44 19.39	0.337	14 6 13.1	1.61	
7	2 44 26.94	0.340	14 6 49.1	1.63	7 1 39.7	2 44 27.50	0.339	14 6 51.8	1.62	
8	2 44 35.12	0.342	14 7 28.1	1.64	8 1 35.9	2 44 35.66	0.341	14 7 30.7	1.63	
9	2 44 43.36	0.344	14 8 7.3	1.64	9 1 32.2	2 44 43.88	0.343	14 8 9.8	1.63	
10	2 44 51.64	0.346	14 8 46.6	1.65	10 1 28.4	2 44 52.15	0.345	14 8 49.0	1.64	
11	2 44 59.97	0.348	14 9 26.0	1.65	11 1 24.6	2 45 0.46	0.347	14 9 28.3	1.64	
12	2 45 8.55	0.350	14 10 5.6	1.66	12 1 20.8	2 45 8.82	0.349	14 10 7.8	1.65	
13	2 45 16.77	0.352	14 10 45.3	1.66	13 1 17.0	2 45 17.22	0.351	14 10 47.4	1.65	
14	2 45 25.23	0.353	14 11 25.1	1.67	14 1 13.2	2 45 25.66	0.353	14 11 27.1	1.66	
15	2 45 33.73	0.355	14 12 5.0	1.67	15 1 9.4	2 45 34.14	0.355	14 12 6.9	1.66	
16	2 45 42.27	0.357	14 12 45.0	1.68	16 1 5.6	2 45 42.66	0.356	14 12 46.8	1.67	
17	2 45 50.85	0.359	14 13 25.2	1.68	17 1 1.8	2 45 51.22	0.357	14 13 26.9	1.67	
18	2 45 59.47	0.360	14 14 5.4	1.68	18 0 58.0	2 45 59.82	0.359	14 14 7.0	1.67	
19	2 46 8.12	0.361	14 14 45.6	1.68	19 0 54.2	2 46 8.45	0.360	14 14 47.1	1.67	
20	2 46 16.79	0.362	14 15 25.9	1.68	20 0 50.5	2 46 17.10	0.361	14 15 27.3	1.68	
21	2 46 25.49	0.363	14 16 6.2	1.69	21 0 46.6	2 46 25.78	0.362	14 16 7.5	1.68	
22	2 46 34.22	0.364	14 16 46.6	1.69	22 0 42.5	2 46 34.49	0.363	14 16 47.8	1.68	
23	2 46 42.98	0.365	14 17 27.1	1.69	23 0 39.1	2 46 43.22	0.364	14 17 28.2	1.68	
24	2 46 51.76	0.366	14 18 7.5	1.69	24 0 35.3	2 46 51.97	0.365	14 18 8.5	1.68	
25	2 47 0.56	0.367	14 18 47.9	1.69	25 0 31.5	2 47 0.75	0.366	14 18 48.8	1.68	
26	2 47 9.38	0.368	14 19 28.3	1.69	26 0 27.7	2 47 9.55	0.367	14 19 29.1	1.68	
27	2 47 18.22	0.369	14 20 8.7	1.69	27 0 23.9	2 47 18.37	0.368	14 20 9.4	1.68	
28	2 47 27.08	0.369	14 20 49.2	1.69	28 0 20.2	2 47 27.21	0.369	14 20 49.8	1.68	
29	2 47 35.95	0.369	14 21 29.6	1.68	29 0 16.4	2 47 36.06	0.369	14 21 30.1	1.68	
30	2 47 44.84	0.370	14 22 10.0	1.68	30 0 12.6	2 47 44.92	0.370	14 22 10.4	1.68	
31	2 47 53.73	+0.370	+14 22 50.3	+1.68	31 0 8.8	2 47 53.79	+0.370	+14 22 50.6	+1.68	

Date. 1881.	FOR WASHINGTON MEAN NOON.					FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.	
	^h ^m ^s	^s	[°] ['] ^{''}	^{''}	^d ^h ^m	^h ^m ^s	^s	[°] ['] ^{''}	^{''}	
May 1	2 47 53.73	+0.370	+14 22 50.3	+1.68	1 0 8.8	2 47 53.79	+0.370	+14 22 50.6	+1.68	
2	2 48 2.62	0.370	14 23 30.6	1.68	2 0 5.0	2 48 2.66	0.370	14 23 30.8	1.67	
3	2 48 11.52	0.371	14 24 10.8	1.68	3 0 1.2	2 48 11.53	0.370	14 24 10.8	1.66	
4	2 48 20.42	0.371	14 24 50.8	1.67	3 23 57.5	2 48 20.41	0.370	14 24 50.7	1.66	
5	2 48 29.33	0.371	14 25 30.8	1.67	4 23 53.7	2 48 29.29	0.370	14 25 30.6	1.66	
6	2 48 38.24	0.371	14 26 10.8	1.67	5 23 49.9	2 48 38.17	0.370	14 26 10.5	1.66	
7	2 48 47.14	0.371	14 26 50.7	1.66	6 23 46.1	2 48 47.05	0.370	14 26 50.3	1.66	
8	2 48 56.04	0.371	14 27 30.4	1.66	7 23 42.3	2 48 55.93	0.370	14 27 29.9	1.65	
9	2 49 4.93	0.370	14 28 10.0	1.65	8 23 38.5	2 49 4.80	0.369	14 28 9.4	1.64	
10	2 49 13.81	0.370	14 28 49.5	1.64	9 23 34.8	2 49 13.66	0.369	14 28 48.8	1.64	
11	2 49 22.68	0.370	14 29 28.9	1.64	10 23 31.0	2 49 22.51	0.369	14 29 28.1	1.64	
12	2 49 31.54	0.369	14 30 8.2	1.64	11 23 27.2	2 49 31.34	0.368	14 30 7.3	1.63	
13	2 49 40.39	0.368	14 30 47.3	1.63	12 23 23.4	2 49 40.16	0.367	14 30 46.3	1.62	
14	2 49 49.22	0.367	14 31 26.2	1.62	13 23 19.6	2 49 48.97	0.367	14 31 25.1	1.62	
15	2 49 58.03	0.367	14 32 5.0	1.62	14 23 15.8	2 49 57.76	0.366	14 32 3.8	1.61	
16	2 50 6.82	0.366	14 32 43.6	1.61	15 23 12.0	2 50 6.53	0.365	14 32 42.3	1.60	
17	2 50 15.60	0.365	14 33 22.1	1.61	16 23 8.3	2 50 15.28	0.364	14 33 20.7	1.60	
18	2 50 24.36	0.364	14 34 0.4	1.59	17 23 4.5	2 50 24.01	0.363	14 33 58.9	1.59	
19	2 50 33.09	0.363	14 34 38.5	1.58	18 23 0.7	2 50 32.72	0.362	14 34 36.9	1.58	
20	2 50 41.79	0.362	14 35 16.3	1.57	19 22 56.9	2 50 41.41	0.361	14 35 14.6	1.57	
21	2 50 50.46	0.361	14 35 53.9	1.56	20 22 53.1	2 50 50.06	0.360	14 35 52.2	1.56	
22	2 50 59.10	0.359	14 36 31.4	1.56	21 22 49.3	2 50 58.68	0.359	14 36 29.6	1.55	
23	2 51 7.71	0.358	14 37 8.6	1.55	22 22 45.5	2 51 7.27	0.357	14 37 6.7	1.54	
24	2 51 16.20	0.357	14 37 45.6	1.54	23 22 41.8	2 51 15.83	0.356	14 37 43.6	1.53	
25	2 51 24.84	0.355	14 38 22.3	1.53	24 22 38.0	2 51 24.35	0.354	14 38 20.2	1.52	
26	2 51 33.35	0.354	14 38 58.8	1.52	25 22 34.2	2 51 32.84	0.353	14 38 56.6	1.51	
27	2 51 41.81	0.352	14 39 35.1	1.51	26 22 30.4	2 51 41.28	0.351	14 39 32.8	1.50	
28	2 51 50.23	0.350	14 40 11.1	1.49	27 22 26.6	2 51 49.68	0.349	14 40 8.8	1.49	
29	2 51 58.62	0.349	14 40 46.8	1.48	28 22 22.8	2 51 58.05	0.348	14 40 44.4	1.48	
30	2 52 6.96	0.347	14 41 22.2	1.47	29 22 19.0	2 52 6.37	0.346	14 41 19.7	1.47	
31	2 52 15.25	0.344	14 41 57.3	1.46	30 22 15.2	2 52 14.65	0.344	14 41 54.7	1.46	
June 1	2 52 23.49	0.342	14 42 32.2	1.45	31 22 11.4	2 52 22.87	0.342	14 42 29.5	1.45	
2	2 52 31.68	0.340	14 43 6.8	1.44	1 22 7.6	2 52 31.04	0.340	14 43 4.0	1.43	
3	2 52 39.81	0.338	14 43 41.1	1.42	2 22 3.8	2 52 39.16	0.337	14 43 38.3	1.42	
4	2 52 47.89	0.335	14 44 15.1	1.41	3 22 0.0	2 52 47.22	0.335	14 44 12.3	1.41	
5	2 52 55.92	0.333	14 44 48.8	1.40	4 21 56.2	2 52 55.23	0.333	14 44 45.9	1.39	
6	2 53 3.89	0.331	14 45 22.1	1.38	5 21 52.4	2 53 3.18	0.330	14 45 19.2	1.38	
7	2 53 11.79	0.328	14 45 55.1	1.37	6 21 48.6	2 53 11.07	0.328	14 45 52.1	1.37	
8	2 53 19.64	0.326	14 46 27.7	1.35	7 21 44.8	2 53 18.90	0.326	14 46 24.7	1.35	
9	2 53 27.43	0.323	14 47 0.0	1.34	8 21 41.0	2 53 26.68	0.323	14 46 56.9	1.34	
10	2 53 35.16	0.320	14 47 31.9	1.32	9 21 37.2	2 53 34.39	0.320	14 47 28.8	1.32	
11	2 53 42.82	0.318	14 48 3.5	1.31	10 21 33.4	2 53 42.04	0.317	14 48 0.3	1.31	
12	2 53 50.41	0.315	14 48 34.7	1.29	11 21 29.6	2 53 49.62	0.314	14 48 31.4	1.29	
13	2 53 57.93	0.312	14 49 5.5	1.28	12 21 25.8	2 53 57.13	0.312	14 49 2.2	1.28	
14	2 54 5.38	0.309	14 49 35.9	1.26	13 21 22.0	2 54 4.57	0.309	14 49 32.6	1.26	
15	2 54 12.76	0.306	14 50 6.0	1.24	14 21 18.2	2 54 11.94	0.306	14 50 2.6	1.24	
16	2 54 20.07	0.303	14 50 35.7	1.23	15 21 14.4	2 54 19.24	0.303	14 50 32.3	1.23	
17	2 54 27.30	0.299	14 51 5.0	1.21	16 21 10.6	2 54 26.46	0.299	14 51 1.6	1.21	
18	2 54 34.46	0.296	14 51 33.9	1.20	17 21 6.8	2 54 33.60	0.296	14 51 30.4	1.19	
19	2 54 41.54	0.293	14 52 2.4	1.18	18 21 3.0	2 54 40.67	0.293	14 51 58.9	1.18	
20	2 54 48.54	0.290	14 52 30.5	1.16	19 20 59.1	2 54 47.66	0.290	14 52 27.0	1.16	
21	2 54 55.46	0.287	14 52 58.2	1.14	20 20 55.3	2 54 54.57	0.286	14 52 54.6	1.14	
22	2 55 2.29	0.283	14 53 25.4	1.13	21 20 51.5	2 55 1.40	0.283	14 53 21.8	1.13	
23	2 55 9.04	0.279	14 53 52.2	1.11	22 20 47.7	2 55 8.14	0.280	14 53 48.6	1.11	
24	2 55 15.70	0.276	14 54 18.6	1.09	23 20 43.9	2 55 14.80	0.276	14 54 15.0	1.09	
25	2 55 22.28	0.272	14 54 44.6	1.07	24 20 40.0	2 55 21.37	0.272	14 54 41.0	1.07	
26	2 55 28.77	0.268	14 55 10.1	1.05	25 20 36.2	2 55 27.86	0.268	14 55 6.5	1.05	
27	2 55 35.17	0.265	14 55 35.2	1.03	26 20 32.4	2 55 34.25	0.264	14 55 31.5	1.03	
28	2 55 41.47	0.261	14 55 59.8	1.02	27 20 28.5	2 55 40.55	0.261	14 55 56.1	1.02	
29	2 55 47.68	0.257	14 56 24.0	1.00	28 20 24.7	2 55 46.76	0.257	14 56 20.3	0.99	
30	2 55 53.79	+0.253	+14 56 47.7	+0.98	29 20 20.9	2 55 52.87	0.253	14 56 44.0	0.98	
					30 20 17.1	2 55 58.89	+0.249	+14 57 7.3	+0.96	

Date. 1881.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
July 1	^h 2 55 ^m 59.81 ^s +0.249		[°] 14 57' 10.9" +0.96		^d 1 20 ^h 13.2 ^m	^h 2 56 ^m 4.81 ^s +0.245		[°] 14 57' 30.1" +0.94	
2	2 56 5.73 0.245		14 57 33.7 0.94		2 20 9.4	2 56 10.63 0.241		14 57 52.4 0.92	
3	2 56 11.56 0.241		14 57 56.0 0.92		3 20 5.6	2 56 16.35 0.237		14 58 14.3 0.90	
4	2 56 17.28 0.236		14 58 17.8 0.90		4 20 1.7	2 56 21.98 0.232		14 58 35.7 0.88	
5	2 56 22.90 0.232		14 58 39.2 0.88		5 19 57.9	2 56 27.50 0.228		14 58 56.5 0.86	
6	2 56 28.42 0.228		14 59 0.0 0.86		6 19 54.1	2 56 32.91 0.223		14 59 16.8 0.84	
7	2 56 33.83 0.223		14 59 20.3 0.84		7 19 50.2	2 56 38.22 0.219		14 59 36.6 0.82	
8	2 56 39.13 0.219		14 59 40.1 0.82		8 19 46.4	2 56 43.43 0.214		14 59 56.0 0.80	
9	2 56 44.33 0.215		14 59 59.4 0.80		9 19 42.5	2 56 48.53 0.210		15 0 14.9 0.78	
10	2 56 49.43 0.210		15 0 18.2 0.78		10 19 38.6	2 56 53.52 0.206		15 0 33.3 0.76	
11	2 56 54.42 0.206		15 0 36.6 0.76		11 19 34.8	2 56 58.41 0.202		15 0 51.2 0.74	
12	2 56 59.30 0.201		15 0 54.5 0.74		12 19 30.9	2 57 3.19 0.197		15 1 8.6 0.72	
13	2 57 4.07 0.197		15 1 11.9 0.72		13 19 27.1	2 57 7.86 0.192		15 1 25.5 0.69	
14	2 57 8.73 0.192		15 1 28.7 0.69		14 19 23.2	2 57 12.41 0.187		15 1 41.8 0.67	
15	2 57 13.27 0.187		15 1 44.9 0.66		15 19 19.4	2 57 16.85 0.183		15 1 57.6 0.65	
16	2 57 17.70 0.182		15 2 0.6 0.64		16 19 15.5	2 57 21.18 0.178		15 2 12.8 0.63	
17	2 57 22.02 0.177		15 2 15.8 0.62		17 19 11.7	2 57 25.39 0.173		15 2 27.5 0.60	
18	2 57 26.22 0.172		15 2 30.4 0.60		18 19 7.8	2 57 29.49 0.168		15 2 41.6 0.58	
19	2 57 30.30 0.168		15 2 44.5 0.58		19 19 3.9	2 57 33.47 0.163		15 2 55.3 0.56	
20	2 57 34.27 0.163		15 2 58.1 0.56		20 19 0.1	2 57 37.33 0.158		15 3 8.5 0.54	
21	2 57 38.12 0.158		15 3 11.2 0.54		21 18 56.2	2 57 41.07 0.154		15 3 21.2 0.52	
22	2 57 41.85 0.153		15 3 23.8 0.51		22 18 52.3	2 57 44.70 0.149		15 3 33.3 0.49	
23	2 57 45.46 0.147		15 3 35.8 0.49		23 18 48.4	2 57 48.20 0.144		15 3 44.8 0.47	
24	2 57 48.94 0.142		15 3 47.2 0.47		24 18 44.6	2 57 51.58 0.139		15 3 55.8 0.45	
25	2 57 52.30 0.137		15 3 58.1 0.44		25 18 40.7	2 57 54.84 0.134		15 4 6.2 0.42	
26	2 57 55.54 0.132		15 4 8.4 0.42		26 18 36.8	2 57 57.98 0.128		15 4 16.1 0.40	
27	2 57 58.66 0.127		15 4 18.2 0.40		27 18 32.9	2 58 0.99 0.123		15 4 25.4 0.38	
28	2 58 1.65 0.122		15 4 27.5 0.38		28 18 29.0	2 58 3.88 0.118		15 4 34.2 0.36	
29	2 58 4.52 0.117		15 4 36.2 0.35		29 18 25.1	2 58 6.64 0.112		15 4 42.4 0.33	
30	2 58 7.26 0.111		15 4 44.3 0.33		30 18 21.3	2 58 9.27 0.107		15 4 50.1 0.31	
31	2 58 9.87 0.106		15 4 51.9 0.30		31 18 17.4	2 58 11.78 0.102		15 4 57.3 0.29	
Aug 1	2 58 12.36 0.101		15 4 58.9 0.28		1 18 13.5	2 58 14.16 0.096		15 5 3.0 0.26	
2	2 58 14.72 0.096		15 5 5.4 0.25		2 18 9.6	2 58 16.41 0.091		15 5 9.9 0.24	
3	2 58 16.95 0.091		15 5 11.3 0.23		3 18 5.7	2 58 18.54 0.086		15 5 15.3 0.22	
4	2 58 19.05 0.085		15 5 16.6 0.21		4 18 1.8	2 58 20.55 0.081		15 5 20.2 0.19	
5	2 58 21.03 0.080		15 5 21.4 0.19		5 17 57.9	2 58 22.43 0.076		15 5 24.6 0.17	
6	2 58 22.88 0.074		15 5 25.6 0.16		6 17 54.0	2 58 24.17 0.070		15 5 28.4 0.15	
7	2 58 24.60 0.069		15 5 29.3 0.14		7 17 50.1	2 58 25.79 0.065		15 5 31.6 0.12	
8	2 58 26.19 0.064		15 5 32.4 0.12		8 17 46.1	2 58 27.28 0.059		15 5 34.2 0.10	
9	2 58 27.65 0.058		15 5 34.9 0.09		9 17 42.2	2 58 28.64 0.054		15 5 36.3 0.08	
10	2 58 28.97 0.052		15 5 36.8 0.07		10 17 38.3	2 58 29.86 0.048		15 5 37.8 0.05	
11	2 58 30.16 0.047		15 5 38.2 0.05		11 17 34.4	2 58 30.95 0.043		15 5 38.8 0.03	
12	2 58 31.22 0.042		15 5 39.0 +0.02		12 17 30.5	2 58 31.92 0.038		15 5 39.3 +0.01	
13	2 58 32.16 0.037		15 5 39.3 0.00		13 17 26.6	2 58 32.76 0.032		15 5 39.2 -0.02	
14	2 58 32.97 0.031		15 5 39.1 -0.02		14 17 22.7	2 58 33.47 0.027		15 5 38.6 0.04	
15	2 58 33.64 0.025		15 5 38.3 0.05		15 17 18.8	2 58 34.04 0.021		15 5 37.4 0.06	
16	2 58 34.18 0.020		15 5 36.9 0.07		16 17 14.8	2 58 34.49 0.016		15 5 35.6 0.09	
17	2 58 34.59 0.014		15 5 34.9 0.09		17 17 10.9	2 58 34.81 0.011		15 5 33.2 0.11	
18	2 58 34.87 0.009		15 5 32.4 0.12		18 17 7.0	2 58 35.00 +0.005		15 5 30.3 0.13	
19	2 58 35.02 +0.003		15 5 29.3 0.14		19 17 3.1	2 58 35.05 -0.001		15 5 26.8 0.16	
20	2 58 35.04 -0.003		15 5 25.7 0.16		20 16 59.1	2 58 34.97 0.006		15 5 22.8 0.18	
21	2 58 34.92 0.008		15 5 21.5 0.19		21 16 55.2	2 58 34.76 0.012		15 5 18.2 0.20	
22	2 58 34.67 0.013		15 5 16.7 0.21		22 16 51.3	2 58 34.42 0.017		15 5 13.1 0.22	
23	2 58 34.29 0.019		15 5 11.4 0.23		23 16 47.3	2 58 33.95 0.022		15 5 7.4 0.24	
24	2 58 33.78 0.024		15 5 5.6 0.26		24 16 43.3	2 58 33.35 0.028		15 5 1.2 0.28	
25	2 58 33.14 0.030		15 4 59.2 0.28		25 16 39.4	2 58 32.62 0.033		15 4 54.4 0.30	
26	2 58 32.37 0.035		15 4 52.2 0.30		26 16 35.5	2 58 31.77 0.038		15 4 47.1 0.32	
27	2 58 31.47 0.041		15 4 44.7 0.32		27 16 31.5	2 58 30.78 0.044		15 4 39.2 0.34	
28	2 58 30.44 0.046		15 4 36.7 0.35		28 16 27.6	2 58 29.66 0.050		15 4 30.8 0.36	
29	2 58 29.28 0.051		15 4 28.1 0.37		29 16 23.6	2 58 28.41 0.055		15 4 21.9 0.38	
30	2 58 27.99 0.056		15 4 19.0 0.39		30 16 19.7	2 58 27.03 0.060		15 4 12.5 0.40	
31	2 58 26.57 -0.062	+15 4 9.4	-0.41		31 16 15.7	2 58 25.53 -0.065	+15 4 2.6	-0.42	

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Sept. 1	h m s	s	° ' "	"	d h m	h m s	s	° ' "	"	-0.45
2	2 58 25.02	-0.067	+15 3 59.3	-0.43	1 16 11.7	2 58 23.90	-0.070	+15 3 52.1	-0.45	
3	2 58 23.34	0.072	15 3 48.6	0.46	2 16 7.8	2 58 22.14	0.076	15 3 41.1	0.47	
4	2 58 21.54	0.078	15 3 37.4	0.48	3 16 3.8	2 58 20.26	0.081	15 3 29.6	0.49	
5	2 58 19.61	0.083	15 3 25.7	0.50	4 15 59.8	2 58 18.26	0.086	15 3 17.6	0.51	
6	2 58 17.56	0.088	15 3 13.5	0.52	5 15 55.9	2 58 16.13	0.091	15 3 5.1	0.53	
7	2 58 15.39	0.093	15 3 0.8	0.54	6 15 51.9	2 58 13.88	0.096	15 2 52.1	0.55	
8	2 58 13.10	0.098	15 2 47.6	0.56	7 15 47.9	2 58 11.52	0.101	15 2 38.6	0.57	
9	2 58 10.68	0.103	15 2 33.9	0.58	8 15 44.0	2 58 9.03	0.106	15 2 24.6	0.60	
10	2 58 8.14	0.108	15 2 19.7	0.60	9 15 40.0	2 58 6.42	0.111	15 2 10.1	0.62	
11	2 58 5.48	0.113	15 2 5.0	0.62	10 15 36.0	2 58 3.69	0.116	15 1 55.1	0.64	
12	2 58 2.70	0.118	15 1 49.8	0.64	11 15 32.0	2 58 0.85	0.121	15 1 39.7	0.65	
13	2 57 59.81	0.123	15 1 34.2	0.66	12 15 28.0	2 57 57.89	0.126	15 1 23.8	0.67	
14	2 57 56.80	0.128	15 1 18.1	0.68	13 15 24.1	2 57 54.81	0.131	15 1 7.5	0.69	
15	2 57 53.67	0.133	15 1 1.5	0.70	14 15 20.1	2 57 51.61	0.136	15 0 50.7	0.71	
16	2 57 50.42	0.138	15 0 44.4	0.72	15 15 16.1	2 57 48.30	0.140	15 0 33.4	0.73	
17	2 57 47.06	0.142	15 0 26.9	0.74	16 15 12.1	2 57 44.88	0.145	15 0 15.6	0.75	
18	2 57 43.60	0.146	15 0 8.9	0.76	17 15 8.1	2 57 41.36	0.149	14 59 57.4	0.77	
19	2 57 40.03	0.151	14 59 50.5	0.78	18 15 4.1	2 57 37.72	0.154	14 59 38.7	0.79	
20	2 57 36.34	0.156	14 59 31.7	0.79	19 15 0.1	2 57 33.97	0.158	14 59 19.6	0.81	
21	2 57 32.53	0.161	14 59 12.5	0.81	20 14 56.1	2 57 30.11	0.163	14 59 0.2	0.82	
22	2 57 28.62	0.165	14 58 52.8	0.83	21 14 52.1	2 57 26.14	0.168	14 58 40.4	0.84	
23	2 57 24.60	0.169	14 58 32.7	0.85	22 14 48.1	2 57 22.07	0.172	14 58 20.1	0.86	
24	2 57 20.48	0.174	14 58 12.2	0.87	23 14 44.1	2 57 17.90	0.176	14 57 59.4	0.87	
25	2 57 16.26	0.178	14 57 51.3	0.88	24 14 40.1	2 57 13.63	0.180	14 57 38.3	0.89	
26	2 57 11.94	0.182	14 57 30.0	0.90	25 14 36.1	2 57 9.26	0.184	14 57 16.8	0.90	
27	2 57 7.51	0.187	14 57 8.2	0.92	26 14 32.1	2 57 4.78	0.189	14 56 54.9	0.92	
28	2 57 2.98	0.191	14 56 46.1	0.93	27 14 28.1	2 57 0.20	0.193	14 56 32.6	0.93	
29	2 56 58.36	0.194	14 56 23.6	0.94	28 14 24.1	2 56 55.54	0.196	14 56 10.0	0.95	
30	2 56 53.65	0.198	14 56 0.8	0.96	29 14 20.1	2 56 50.79	0.200	14 55 47.0	0.96	
Oct. 1	2 56 48.85	0.202	14 55 37.6	0.97	30 14 16.1	2 56 45.95	0.204	14 55 23.7	0.97	
2	2 56 43.96	0.206	14 55 14.1	0.99	1 14 12.1	2 56 41.01	0.208	14 55 0.1	0.99	
3	2 56 38.97	0.210	14 54 50.2	1.01	2 14 8.1	2 56 35.98	0.211	14 54 36.1	1.01	
4	2 56 33.89	0.213	14 54 26.0	1.02	3 14 4.0	2 56 30.87	0.214	14 54 11.8	1.02	
5	2 56 28.73	0.216	14 54 1.5	1.03	4 14 0.0	2 56 25.69	0.218	14 53 47.1	1.04	
6	2 56 23.50	0.220	14 53 36.7	1.04	5 13 56.0	2 56 20.42	0.221	14 53 22.1	1.05	
7	2 56 18.18	0.223	14 53 11.6	1.05	6 13 52.0	2 56 15.07	0.224	14 52 56.9	1.06	
8	2 56 12.78	0.227	14 52 46.2	1.06	7 13 48.0	2 56 9.64	0.228	14 52 31.4	1.07	
9	2 56 7.30	0.230	14 52 20.5	1.07	8 13 43.9	2 56 4.14	0.231	14 52 5.7	1.08	
10	2 56 1.75	0.233	14 51 54.5	1.09	9 13 39.9	2 55 58.57	0.234	14 51 39.7	1.09	
11	2 55 56.13	0.236	14 51 28.3	1.10	10 13 35.9	2 55 52.92	0.237	14 51 13.4	1.10	
12	2 55 50.44	0.239	14 51 1.8	1.11	11 13 31.9	2 55 47.20	0.240	14 50 46.8	1.11	
13	2 55 44.68	0.241	14 50 35.1	1.12	12 13 27.8	2 55 41.41	0.243	14 50 20.0	1.12	
14	2 55 38.85	0.244	14 50 8.1	1.13	13 13 23.8	2 55 35.56	0.245	14 49 53.0	1.13	
15	2 55 32.95	0.247	14 49 40.9	1.14	14 13 19.8	2 55 29.64	0.247	14 49 25.7	1.14	
16	2 55 26.99	0.249	14 49 13.5	1.15	15 13 15.7	2 55 23.67	0.250	14 48 58.2	1.15	
17	2 55 20.97	0.252	14 48 45.8	1.16	16 13 11.7	2 55 17.64	0.253	14 48 30.5	1.16	
18	2 55 14.90	0.254	14 48 18.0	1.17	17 13 7.6	2 55 11.56	0.255	14 48 2.7	1.16	
19	2 55 8.78	0.256	14 47 50.0	1.17	18 13 3.6	2 55 5.43	0.257	14 47 34.7	1.17	
20	2 55 2.60	0.259	14 47 21.8	1.18	19 12 59.6	2 54 59.24	0.259	14 47 6.5	1.18	
21	2 54 56.37	0.261	14 46 53.5	1.18	20 12 55.6	2 54 53.00	0.261	14 46 38.2	1.18	
22	2 54 50.09	0.263	14 46 25.0	1.19	21 12 51.5	2 54 46.71	0.263	14 46 9.7	1.19	
23	2 54 43.77	0.264	14 45 56.3	1.20	22 12 47.5	2 54 40.38	0.265	14 45 41.0	1.20	
24	2 54 37.40	0.266	14 45 27.5	1.20	23 12 43.4	2 54 34.01	0.266	14 45 12.2	1.20	
25	2 54 31.00	0.268	14 44 58.6	1.21	24 12 39.4	2 54 27.61	0.268	14 44 43.3	1.20	
26	2 54 24.56	0.269	14 44 29.6	1.21	25 12 35.3	2 54 21.17	0.269	14 44 14.4	1.21	
27	2 54 18.08	0.270	14 44 0.5	1.22	26 12 31.3	2 54 14.69	0.270	14 43 45.4	1.21	
28	2 54 11.57	0.272	14 43 31.3	1.22	27 12 27.3	2 54 8.18	0.272	14 43 16.2	1.22	
29	2 54 5.03	0.273	14 43 1.1	1.22	28 12 23.2	2 54 1.64	0.273	14 42 46.8	1.22	
30	2 53 58.47	0.274	14 42 32.7	1.22	29 12 19.2	2 53 55.08	0.274	14 42 17.7	1.22	
31	2 53 51.88	0.275	14 42 3.4	1.22	30 12 15.2	2 53 48.50	0.274	14 41 48.4	1.22	
32	2 53 45.27	0.276	14 41 34.0	1.23	31 12 11.1	2 53 41.90	0.275	14 41 19.0	1.22	
33	2 53 38.63	-0.277	+14 41 4.5	-1.23	32 12 7.1	2 53 35.28	-0.276	+14 40 49.6	-1.22	

Date. 1881.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
Nov. 1	2 53 38.63	-0.277	+14 41' 4.5	-1.23	1 12 7.1	2 53 35.28	-0.276	+14 40' 49.6	-1.22
2	2 53 31.98	0.278	14 40 35.0	1.23	2 12 3.0	2 53 28.64	0.277	14 40 20.2	1.22
3	2 53 25.32	0.278	14 40 5.6	1.23	3 11 59.0	2 53 21.99	0.277	14 39 50.9	1.22
4	2 53 18.65	0.278	14 39 36.2	1.23	4 11 55.0	2 53 15.34	0.278	14 39 21.6	1.22
5	2 53 11.98	0.278	14 39 6.8	1.22	5 11 50.9	2 53 8.68	0.278	14 38 52.3	1.22
6	2 53 5.30	0.279	14 38 37.4	1.22	6 11 46.8	2 53 2.01	0.278	14 38 23.0	1.22
7	2 52 58.61	0.279	14 38 8.0	1.22	7 11 42.8	2 52 55.34	0.278	14 37 53.7	1.22
8	2 52 51.92	0.279	14 37 38.7	1.22	8 11 38.8	2 52 48.68	0.278	14 37 24.5	1.22
9	2 52 45.24	0.278	14 37 9.5	1.22	9 11 34.7	2 52 42.02	0.278	14 36 55.4	1.21
10	2 52 38.57	0.278	14 36 40.3	1.22	10 11 30.7	2 52 35.37	0.277	14 36 26.3	1.21
11	2 52 31.90	0.278	14 36 11.2	1.21	11 11 26.6	2 52 28.73	0.277	14 35 57.4	1.20
12	2 52 25.24	0.277	14 35 42.3	1.20	12 11 22.6	2 52 22.09	0.277	14 35 28.6	1.20
13	2 52 18.59	0.277	14 35 13.5	1.20	13 11 18.6	2 52 15.46	0.276	14 34 59.9	1.19
14	2 52 11.95	0.276	14 34 44.8	1.19	14 11 14.5	2 52 8.85	0.275	14 34 31.4	1.19
15	2 52 5.34	0.275	14 34 16.3	1.19	15 11 10.5	2 52 2.26	0.274	14 34 3.0	1.18
16	2 51 58.75	0.274	14 33 47.9	1.18	16 11 6.4	2 51 55.70	0.273	14 33 34.8	1.17
17	2 51 52.18	0.273	14 33 19.7	1.18	17 11 2.4	2 51 49.16	0.272	14 33 6.7	1.17
18	2 51 45.64	0.272	14 32 51.6	1.17	18 10 58.4	2 51 42.65	0.270	14 32 38.8	1.16
19	2 51 39.12	0.271	14 32 23.7	1.16	19 10 54.3	2 51 36.17	0.269	14 32 11.1	1.15
20	2 51 32.64	0.269	14 31 56.0	1.15	20 10 50.3	2 51 29.73	0.268	14 31 43.6	1.14
21	2 51 26.19	0.268	14 31 28.6	1.14	21 10 46.2	2 51 23.32	0.266	14 31 16.3	1.13
22	2 51 19.78	0.266	14 31 1.4	1.13	22 10 42.2	2 51 16.94	0.265	14 30 49.3	1.12
23	2 51 13.41	0.265	14 30 34.4	1.12	23 10 38.1	2 51 10.60	0.264	14 30 22.5	1.11
24	2 51 7.08	0.263	14 30 7.6	1.11	24 10 34.1	2 51 4.30	0.262	14 29 55.9	1.10
25	2 51 0.80	0.261	14 29 41.1	1.10	25 10 30.1	2 50 58.06	0.259	14 29 29.6	1.09
26	2 50 54.57	0.259	14 29 14.9	1.09	26 10 26.1	2 50 51.87	0.257	14 29 3.5	1.08
27	2 50 48.39	0.256	14 28 48.9	1.08	27 10 22.0	2 50 45.74	0.255	14 28 37.7	1.07
28	2 50 42.27	0.254	14 28 23.2	1.07	28 10 18.0	2 50 39.66	0.252	14 28 12.3	1.05
29	2 50 36.20	0.252	14 27 57.9	1.05	29 10 13.9	2 50 33.63	0.250	14 27 47.2	1.04
30	2 50 30.18	0.249	14 27 32.9	1.04	30 10 9.9	2 50 27.65	0.247	14 27 22.4	1.03
Dec. 1	2 50 24.22	0.247	14 27 8.2	1.02	1 10 5.9	2 50 21.74	0.245	14 26 57.9	1.02
2	2 50 18.33	0.244	14 26 43.8	1.01	2 10 1.9	2 50 15.89	0.242	14 26 33.7	1.01
3	2 50 12.50	0.241	14 26 19.7	1.00	3 9 57.8	2 50 10.11	0.239	14 26 9.8	0.99
4	2 50 6.75	0.238	14 25 56.0	0.98	4 9 53.8	2 50 4.40	0.237	14 25 46.3	0.97
5	2 50 1.07	0.236	14 25 32.7	0.96	5 9 49.8	2 49 58.76	0.234	14 25 23.2	0.95
6	2 49 55.45	0.233	14 25 9.8	0.95	6 9 45.8	2 49 53.18	0.231	14 25 0.5	0.94
7	2 49 49.90	0.230	14 24 47.2	0.93	7 9 41.7	2 49 47.68	0.228	14 24 38.2	0.93
8	2 49 44.43	0.226	14 24 25.0	0.92	8 9 37.7	2 49 42.26	0.224	14 24 16.2	0.91
9	2 49 39.04	0.223	14 24 3.3	0.90	9 9 33.7	2 49 36.92	0.221	14 23 54.7	0.89
10	2 49 33.74	0.219	14 23 41.9	0.88	10 9 29.7	2 49 31.66	0.217	14 23 33.6	0.87
11	2 49 28.52	0.216	14 23 21.0	0.86	11 9 25.7	2 49 26.49	0.214	14 23 12.9	0.86
12	2 49 23.38	0.213	14 23 0.5	0.85	12 9 21.7	2 49 21.40	0.210	14 22 52.6	0.84
13	2 49 18.32	0.209	14 22 40.4	0.83	13 9 17.6	2 49 16.39	0.207	14 22 32.8	0.82
14	2 49 13.35	0.205	14 22 20.8	0.81	14 9 13.6	2 49 11.47	0.203	14 22 13.4	0.80
15	2 49 8.48	0.201	14 22 1.7	0.79	15 9 9.6	2 49 6.65	0.199	14 21 54.5	0.78
16	2 49 3.71	0.197	14 21 43.0	0.77	16 9 5.6	2 49 1.92	0.195	14 21 36.1	0.76
17	2 48 59.03	0.193	14 21 24.8	0.75	17 9 1.6	2 48 57.29	0.191	14 21 18.1	0.74
18	2 48 54.44	0.189	14 21 7.0	0.73	18 8 57.6	2 48 52.75	0.187	14 21 0.5	0.72
19	2 48 49.95	0.185	14 20 49.8	0.71	19 8 53.6	2 48 48.31	0.183	14 20 43.5	0.70
20	2 48 45.56	0.181	14 20 33.1	0.69	20 8 49.6	2 48 43.97	0.178	14 20 27.0	0.68
21	2 48 41.28	0.176	14 20 16.8	0.67	21 8 45.6	2 48 39.74	0.174	14 20 11.0	0.65
22	2 48 37.11	0.172	14 20 1.1	0.64	22 8 41.6	2 48 35.62	0.170	14 19 55.6	0.63
23	2 48 33.04	0.167	14 19 45.9	0.62	23 8 37.6	2 48 31.60	0.165	14 19 40.6	0.61
24	2 48 29.08	0.163	14 19 31.2	0.60	24 8 33.6	2 48 27.69	0.161	14 19 26.1	0.59
25	2 48 25.23	0.158	14 19 17.1	0.58	25 8 29.6	2 48 23.89	0.156	14 19 12.2	0.57
26	2 48 21.50	0.153	14 19 3.5	0.56	26 8 25.6	2 48 20.21	0.151	14 18 58.8	0.55
27	2 48 17.88	0.148	14 18 50.5	0.53	27 8 21.6	2 48 16.65	0.146	14 18 46.0	0.52
28	2 48 14.38	0.143	14 18 38.0	0.51	28 8 17.6	2 48 13.20	0.141	14 18 33.8	0.50
29	2 48 10.99	0.139	14 18 26.1	0.49	29 8 13.6	2 48 9.86	0.137	14 18 22.1	0.47
30	2 48 7.71	0.134	14 18 14.7	0.47	30 8 9.6	2 48 6.63	0.132	14 18 11.0	0.45
31	2 48 4.56	0.129	14 18 3.9	0.44	31 8 5.6	2 48 3.52	0.127	14 18 0.4	0.43
32	2 48 1.53	-0.124	+14 17 53.7	-0.42	32 8 1.7	2 48 0.54	-0.122	+14 17 50.4	-0.41

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.

Mean Noon.	HORIZONTAL PARALLAXES.			SEMIDIAMETERS.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	♂	♀	♂	♂	♀	♂	♂	♀	♂
Jan. 1	6.59	8.36	3.72	2.49	8.07	2.12	0.18	0.56	0.15
6	6.40	8.63	3.75	2.41	8.33	2.14	0.18	0.57	0.15
11	6.28	8.92	3.78	2.37	8.61	2.16	0.17	0.58	0.16
16	6.22	9.24	3.82	2.35	8.92	2.18	0.17	0.60	0.16
21	6.22	9.59	3.86	2.35	9.26	2.21	0.17	0.62	0.16
26	6.29	9.98	3.90	2.37	9.63	2.23	0.17	0.64	0.16
31	6.44	10.40	3.94	2.43	10.04	2.25	0.17	0.67	0.16
Feb. 5	6.70	10.87	3.98	2.53	10.49	2.27	0.17	0.70	0.16
10	7.12	11.38	4.03	2.69	10.98	2.30	0.18	0.73	0.17
15	7.79	11.94	4.07	2.94	11.53	2.32	0.20	0.77	0.17
20	8.79	12.57	4.12	3.32	12.15	2.35	0.22	0.82	0.17
25	10.21	13.29	4.17	3.85	12.84	2.38	0.26	0.87	0.17
Mar. 2	11.92	14.10	4.22	4.50	13.61	2.41	0.30	0.93	0.17
7	13.53	15.00	4.27	5.11	14.48	2.44	0.34	1.00	0.17
12	14.42	16.01	4.32	5.44	15.46	2.47	0.36	1.08	0.17
17	14.31	17.15	4.37	5.40	16.58	2.50	0.36	1.17	0.18
22	13.49	18.47	4.43	5.09	17.83	2.53	0.34	1.28	0.18
27	12.42	19.91	4.48	4.69	19.23	2.56	0.31	1.39	0.18
April 1	11.34	21.56	4.54	4.28	20.82	2.59	0.29	1.51	0.18
6	10.39	23.31	4.60	3.92	22.52	2.62	0.26	1.64	0.18
11	9.56	25.20	4.66	3.61	24.34	2.66	0.24	1.78	0.18
16	8.86	27.10	4.72	3.34	26.17	2.69	0.22	1.91	0.18
21	8.25	28.83	4.78	3.11	27.85	2.73	0.21	2.02	0.18
26	7.74	30.16	4.84	2.92	29.13	2.76	0.20	2.10	0.19
May 1	7.32	30.82	4.90	2.76	29.77	2.80	0.19	2.12	0.19
6	6.99	30.71	4.96	2.64	29.66	2.83	0.18	2.09	0.19
11	6.77	29.77	5.03	2.56	28.81	2.87	0.18	2.01	0.19
16	6.69	28.31	5.10	2.53	27.34	2.91	0.18	1.89	0.19
21	6.78	26.46	5.17	2.56	25.56	2.95	0.18	1.76	0.20
26	7.06	24.51	5.24	2.66	23.68	2.99	0.19	1.62	0.20
31	7.52	22.61	5.31	2.83	21.84	3.03	0.21	1.49	0.20
June 5	8.14	20.85	5.38	3.07	20.14	3.07	0.23	1.37	0.21
10	8.91	19.25	5.46	3.36	18.50	3.12	0.25	1.27	0.21
15	9.81	17.81	5.54	3.70	17.20	3.16	0.27	1.18	0.21
20	10.84	16.54	5.62	4.09	15.97	3.21	0.29	1.10	0.22
25	11.99	15.42	5.71	4.52	14.89	3.26	0.32	1.03	0.22
30	13.19	14.43	5.80	4.98	13.94	3.31	0.35	0.97	0.23
July 5	14.32	13.55	5.89	5.40	13.09	3.36	0.38	0.91	0.23
10	15.14	12.78	5.98	5.72	12.34	3.42	0.40	0.86	0.24
15	15.36	12.08	6.08	5.80	11.66	3.48	0.40	0.82	0.24
20	14.79	11.45	6.19	5.58	11.05	3.54	0.39	0.78	0.25
25	13.54	10.89	6.31	5.11	10.52	3.60	0.36	0.75	0.25
30	11.97	10.39	6.43	4.52	10.04	3.67	0.32	0.72	0.26
Aug. 4	10.39	9.95	6.55	3.92	9.61	3.74	0.28	0.69	0.26
9	9.03	9.54	6.68	3.41	9.22	3.82	0.24	0.66	0.27
14	7.98	9.16	6.82	3.01	8.85	3.90	0.21	0.63	0.27
19	7.24	8.82	6.97	2.73	8.52	3.98	0.19	0.61	0.28
24	6.78	8.52	7.13	2.56	8.23	4.08	0.18	0.59	0.29
29	6.52	8.24	7.31	2.46	7.96	4.18	0.17	0.56	0.30
Sept. 3	6.40	7.98	7.49	2.42	7.71	4.28	0.16	0.54	0.31
8	6.39	7.74	7.69	2.41	7.48	4.39	0.16	0.52	0.32
13	6.45	7.52	7.90	2.43	7.26	4.51	0.16	0.51	0.33
18	6.57	7.32	8.13	2.48	7.07	4.64	0.17	0.49	0.34
23	6.76	7.14	8.38	2.55	6.89	4.78	0.17	0.47	0.35
28	7.02	6.97	8.64	2.65	6.72	4.93	0.18	0.46	0.36
Oct. 3	7.35	6.81	8.92	2.78	6.56	5.09	0.19	0.44	0.37
8	7.80	6.66	9.23	2.94	6.43	5.27	0.20	0.43	0.38
13	8.38	6.53	9.56	3.16	6.31	5.46	0.22	0.42	0.39
18	9.14	6.40	9.91	3.45	6.19	5.66	0.25	0.41	0.41
23	10.15	6.28	10.29	3.83	6.07	5.87	0.28	0.40	0.43
28	11.38	6.17	10.70	4.30	5.96	6.11	0.31	0.40	0.45

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.

Mean Noon.	HORIZONTAL PARALLAXES.			SEMIDIAMETERS.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	♂	♀	♂	♂	♀	♂	♂	♀	♂
Nov. 2	12.61	6.07	11.12	4.76	5.86	6.35	0.34	0.39	0.46
7	13.10	5.98	11.57	4.95	5.77	6.61	0.34	0.39	0.48
12	12.27	5.90	12.04	4.63	5.70	6.87	0.32	0.38	0.50
17	10.71	5.82	12.51	4.04	5.62	7.14	0.28	0.38	0.52
22	9.28	5.75	12.98	3.50	5.55	7.41	0.24	0.38	0.54
27	8.24	5.68	13.45	3.11	5.48	7.67	0.21	0.38	0.56
Dec. 2	7.49	5.62	13.87	2.83	5.42	7.91	0.20	0.38	0.58
7	7.00	5.56	14.19	2.64	5.37	8.11	0.19	0.38	0.60
12	6.66	5.51	14.44	2.51	5.32	8.26	0.18	0.38	0.61
17	6.41	5.46	14.63	2.42	5.27	8.36	0.18	0.38	0.62
22	6.26	5.42	14.66	2.36	5.23	8.38	0.17	0.38	0.62
27	6.17	5.37	14.59	2.33	5.19	8.33	0.17	0.38	0.62
32	6.14	5.33	14.40	2.32	5.15	8.21	0.17	0.37	0.61
Mean Noon.	♂	h	♂	♂	h	♂	♂	h	♂
Jan. 1	1.82	0.98	0.50	19.36	8.62	1.89	1.38	0.62	0.13
11	1.76	0.96	0.50	18.75	8.47	1.90	1.33	0.61	0.13
21	1.71	0.94	0.50	18.19	8.32	1.91	1.29	0.60	0.13
31	1.66	0.93	0.51	17.68	8.18	1.92	1.26	0.59	0.13
Feb. 10	1.62	0.91	0.51	17.24	8.05	1.93	1.23	0.58	0.13
20	1.59	0.90	0.51	16.85	7.94	1.94	1.21	0.57	0.13
Mar. 2	1.55	0.89	0.51	16.53	7.84	1.94	1.18	0.56	0.13
12	1.53	0.88	0.51	16.27	7.76	1.94	1.16	0.56	0.13
22	1.51	0.87	0.51	16.06	7.69	1.93	1.15	0.55	0.13
April 1	1.50	0.87	0.51	15.91	7.65	1.92	1.15	0.55	0.13
11	1.49	0.86	0.50	15.81	7.62	1.91	1.14	0.55	0.13
21	1.49	0.86	0.50	15.77	7.61	1.90	1.14	0.55	0.13
May 1	1.49	0.86	0.50	15.79	7.62	1.89	1.14	0.55	0.13
11	1.49	0.87	0.49	15.85	7.64	1.87	1.15	0.56	0.13
21	1.50	0.87	0.49	15.97	7.69	1.85	1.16	0.56	0.12
31	1.51	0.88	0.48	16.14	7.75	1.83	1.18	0.56	0.12
June 10	1.54	0.89	0.48	16.36	7.83	1.82	1.20	0.57	0.12
20	1.57	0.90	0.48	16.63	7.92	1.80	1.22	0.58	0.12
30	1.60	0.91	0.47	16.96	8.03	1.79	1.25	0.59	0.12
July 10	1.63	0.92	0.47	17.35	8.16	1.77	1.28	0.60	0.12
20	1.67	0.94	0.47	17.79	8.29	1.76	1.32	0.61	0.12
30	1.72	0.96	0.46	18.29	8.44	1.75	1.36	0.62	0.12
Aug. 9	1.77	0.97	0.46	18.83	8.59	1.75	1.40	0.63	0.12
19	1.82	0.99	0.46	19.42	8.75	1.74	1.45	0.64	0.12
29	1.88	1.01	0.46	20.04	8.90	1.74	1.50	0.65	0.12
Sept. 8	1.94	1.02	0.46	20.69	9.05	1.74	1.55	0.66	0.12
18	2.00	1.04	0.46	21.33	9.19	1.74	1.59	0.67	0.12
28	2.06	1.05	0.46	21.95	9.31	1.74	1.64	0.68	0.12
Oct. 8	2.12	1.06	0.46	22.51	9.40	1.75	1.68	0.69	0.12
18	2.16	1.07	0.46	22.97	9.47	1.76	1.71	0.69	0.12
28	2.19	1.07	0.47	23.30	9.49	1.77	1.73	0.69	0.12
Nov. 7	2.21	1.07	0.47	23.46	9.49	1.78	1.74	0.69	0.12
17	2.21	1.07	0.48	23.45	9.45	1.80	1.74	0.69	0.12
27	2.19	1.06	0.48	23.25	9.38	1.82	1.73	0.68	0.12
Dec. 7	2.15	1.05	0.48	22.90	9.27	1.83	1.69	0.67	0.12
17	2.11	1.04	0.49	22.40	9.15	1.85	1.66	0.66	0.12
27	2.05	1.02	0.49	21.81	9.00	1.87	1.61	0.65	0.13
37	1.99	1.00	0.50	21.17	8.85	1.87	1.56	0.64	0.13

Horizontal Parallax of Neptune, 0".30, Jan. 1 to Feb. 10; July 28 to Oct. 2; and after Dec. 10.

" " " 0".39, Feb. 11 to July 28.

" " " 0".31, Oct. 2 to Dec. 10.

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Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1881.	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\beta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .
Jan. 1.0	+1961837	0999	-8839028	9166	-3834942	5050	281° 30' 31".9	13.9	+0.42	9.99
1.5	2047502	6661	8822675	2821	3827844	7956	282 0 67.4	49.3	0.47	26772
2.0	21333004	2161	8805631	5785	3820447	0662	282 31 42.9	24.7	0.51	26778
2.5	2218338	7492	8787899	8061	3812752	2870	283 2 18.3	0.0	0.55	26802
3.0	2303497	2649	8769480	9650	3804759	4880	283 32 53.7	35.3	0.59	26820
3.5	2388475	7624	8750376	0554	3796468	6593	284 3 29.0	10.5	0.62	26842
4.0	2473264	2411	8730588	0774	3787881	8010	284 33 64.3	45.7	0.64	26869
4.5	2557857	7002	8710119	0313	3778999	9131	285 4 39.5	20.9	0.65	26900
5.0	2642248	1391	8688970	9172	3769823	9958	285 34 74.6	55.9	0.66	26936
5.5	2726431	5572	8667145	7355	3760354	0492	286 5 49.6	30.8	0.66	26977
6.0	2810396	9536	8644645	4863	3750593	0735	286 36 24.5	5.6	0.65	27024
6.5	2894137	3275	8621473	1699	3740540	0685	287 6 59.2	40.2	0.63	27076
7.0	2977648	6785	8597631	7865	3730197	0345	287 37 33.7	14.6	0.61	27133
7.5	3060923	0058	8573121	3363	3719564	9716	288 7 68.1	48.9	0.58	27195
8.0	3143956	3090	8547945	8196	3708643	8799	288 38 42.4	23.1	0.55	27264
8.5	3226741	5874	8522106	2365	3697434	7593	289 8 76.6	57.2	0.51	27338
9.0	3309271	8403	8495606	5873	3685939	6101	289 39 50.6	31.2	0.46	27419
9.5	3391541	0672	8468448	8723	3674159	4325	290 10 24.4	5.0	0.41	27505
10.0	3473544	2674	8440634	0918	3662094	2264	290 40 58.0	38.5	0.36	27598
10.5	3555275	4404	8412167	2459	3649746	9919	291 11 31.5	11.9	0.30	27697
11.0	3636727	5855	8383048	3349	3637116	7292	291 41 64.9	45.2	0.23	27803
11.5	3717895	7022	8353280	3590	3624205	4385	292 12 38.2	18.4	0.17	27916
12.0	3798774	7901	8322866	3184	3611013	1197	292 42 71.3	51.4	0.10	28035
12.5	3879358	8484	8291809	2135	3597542	7729	293 13 44.2	24.2	+0.04	28161
13.0	3959640	8766	8260110	0445	3583793	3983	293 43 77.0	56.9	-0.03	28294
13.5	4039614	8740	8227772	8117	3569766	9060	294 14 49.7	29.5	0.10	28434
14.0	4119274	8400	8194802	5155	3555463	5661	294 45 22.2	2.0	0.16	28580
14.5	4198614	7740	8161197	1559	3540886	1087	295 15 54.6	34.3	0.22	28733
15.0	4277629	6755	8126961	7331	3526035	6239	295 46 26.8	6.5	0.28	28894
15.5	4356314	5440	8092096	2475	3510911	1119	296 16 58.9	38.5	0.34	29062
16.0	4434663	3790	8056604	6992	3495515	5727	296 47 30.8	10.3	0.39	29236
16.5	4512670	1797	8020490	0887	3479850	0065	297 17 62.7	42.1	0.44	29417
17.0	4590330	9458	7983755	4161	3463915	4133	297 48 34.4	13.7	0.48	29605
17.5	4667638	6767	7946403	6818	3447711	7933	298 18 66.0	45.2	0.51	29800
18.0	4744586	3716	7908436	8860	3431239	1465	298 49 37.5	16.6	0.54	30001
18.5	4821169	0300	7869856	0289	3414501	4730	299 19 68.9	47.9	0.56	30209
19.0	4897382	6514	7830666	1108	3397499	7731	299 50 40.1	19.1	0.57	30423
19.5	4973219	2352	7790869	1320	3380233	0469	300 20 71.2	50.2	0.57	30644
20.0	5048673	7807	7750468	0928	3362704	2944	300 51 42.2	21.1	0.56	30871
20.5	5123740	2875	7709466	9935	3344913	5156	301 21 73.1	51.9	0.54	31103
21.0	5198413	7550	7667863	8341	3326862	7108	301 52 43.8	22.5	0.52	31341
21.5	5272686	1824	7625666	6153	3308552	8802	302 22 74.5	53.1	0.49	31585
22.0	5346554	5694	7582876	3372	3289985	0239	302 53 45.0	23.5	0.46	31835
22.5	5420012	9154	7539495	0000	3271162	1419	303 23 75.4	53.8	0.43	32090
23.0	5493053	2197	7495526	6040	3252084	2344	303 54 45.7	24.0	0.37	32349
23.5	5565671	4817	7450974	1497	3232752	3016	304 24 75.9	54.1	0.32	32613
24.0	5637860	7008	7405841	6373	3213168	3436	304 55 45.9	24.1	0.27	32882
24.5	5709615	8765	7360130	0671	3193333	3604	305 25 75.8	54.0	0.21	33155
25.0	5780929	0082	7313845	4395	3173248	3522	305 56 45.5	23.6	0.15	33432
25.5	5851796	0951	7266990	7549	3152916	3194	306 26 75.0	53.0	0.09	33714
26.0	5922210	1368	7219567	0135	3132337	2619	306 57 44.4	22.3	-0.03	34000
26.5	5992166	1327	7171583	2160	3111515	1800	307 27 73.6	51.4	+0.04	34289
27.0	6061659	0823	7123041	3627	3090450	0738	307 58 42.6	20.3	0.11	34582
27.5	6030681	9848	7073944	4539	3069145	9437	308 28 71.3	49.0	0.17	34880
28.0	6109227	8397	7024297	4901	3047602	7898	308 59 39.8	17.4	0.23	35182
28.5	6267293	6466	6974103	4716	3025822	6121	309 29 68.1	45.7	0.29	35487
29.0	6334872	4049	6923367	3989	3003807	4109	310 0 36.2	13.7	0.35	35795
29.5	6401959	1139	6872093	2724	2981559	1865	310 30 64.0	41.5	0.40	36106
30.0	6468549	7733	6820285	0925	2959079	9389	311 1 31.6	9.0	0.44	36422
30.5	6534637	3825	6767947	8596	2936369	6683	311 31 58.9	36.2	0.48	36741
31.0	6600216	9408	6715083	5741	2913431	3746	312 2 25.9	3.1	0.51	37063
31.5	+6665281	4477	-6661698	2364	-2890267	0587	312 32 52.6	29.7	+0.53	37388

NOTE.—The accented letters correspond to the mean equinox and equator of January 0^d.0.

SUN'S COÖRDINATES, 1881. 391

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.				
1881.	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\beta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .	
Feb. 1.0	+6729827	9027	-6607795	8470	-2866879	7202	313° 2' 79.0	56.0	+0.54	37717	
1.5	6793849	3053	-6553381	4065	-2843271	3598	313 33 45.1	22.0	0.54	38049	
2.0	6857343	6552	-6498459	9152	-2819444	9774	314 3 70.8	47.7	0.54	38384	
2.5	6920303	9516	-6443036	3738	-2795398	5731	314 34 36.1	13.0	0.53	38723	
3.0	6982724	1942	-6387115	7825	-2771137	1473	315 4 61.1	38.0	0.52	39065	
3.5	7044601	3823	-6330703	1422	-2746664	7004	315 35 25.8	2.6	0.49	39411	
4.0	7105930	5157	-6273805	4532	-2721980	2323	316 5 50.1	26.8	0.46	39761	
4.5	7166707	5939	-6216424	7160	-2697087	7433	316 35 74.0	50.6	0.43	40115	
5.0	7226928	6165	-6158565	9309	-2671986	2335	317 6 37.5	14.0	0.39	40473	
5.5	7286589	5831	-6100233	0986	-2646680	7033	317 36 60.6	37.0	0.34	40835	
6.0	7345686	4933	-6041433	2195	-2621171	15-7	318 6 83.4	59.7	0.29	41202	
6.5	7404216	3468	-5982171	2941	-2595461	5820	318 37 45.8	22.1	0.23	41573	
7.0	7462174	1432	-5922450	3228	-2569552	9914	319 7 67.8	44.1	0.17	41949	
7.5	7519556	8819	-5862276	3062	-2543448	3814	319 38 29.4	5.6	0.11	42330	
8.0	7576358	5627	-5801653	2448	-2517150	7519	320 8 50.6	26.7	+0.04	42715	
8.5	7632575	1850	-5740589	1392	-2490660	1032	320 38 71.4	47.5	-0.03	43105	
9.0	7688204	7485	-5679086	9897	-2463980	4355	321 9 31.8	7.8	0.10	43501	
9.5	7743241	2528	-5617151	7970	-2437112	7491	321 39 51.8	27.7	0.17	43902	
10.0	7797682	6975	-5554788	5615	-2410059	0441	322 9 71.3	47.1	0.24	44308	
10.5	7851524	0823	-5492002	2837	-2382822	3207	322 40 30.4	6.2	0.31	44719	
11.0	7904764	4069	-5428797	9640	-2355403	5791	323 10 49.2	24.9	0.37	45136	
11.5	7957399	6710	-5365179	6030	-2327804	8195	323 40 67.6	43.2	0.43	45558	
12.0	8009425	8743	-5301151	2010	-2300027	0421	324 11 25.6	1.2	0.48	45985	
12.5	8060838	0162	-5236720	7587	-2272075	2472	324 41 43.2	18.8	0.52	46418	
13.0	8111635	0966	-5171889	2764	-2243949	4349	325 11 60.4	36.0	0.56	46857	
13.5	8161814	1152	-5106664	7547	-2215652	6055	325 41 77.3	52.8	0.59	47301	
14.0	8211369	0714	-5041049	1940	-2187186	7592	326 12 33.8	9.2	0.61	47750	
14.5	8260297	9649	-4975049	5948	-2158552	8961	326 42 49.9	25.2	0.63	48204	
15.0	8308595	7954	-4908670	9576	-2129752	10164	327 12 65.6	40.9	0.64	48664	
15.5	8356261	5627	-4841914	2828	-2100789	1204	327 42 81.0	56.3	0.64	49129	
16.0	8403291	2664	-4774788	5709	-2071664	2082	328 13 36.1	11.4	0.64	49599	
16.5	8449683	9063	-4707295	8224	-2042380	2801	328 43 50.9	26.1	0.63	50075	
17.0	8495434	4822	-4639441	10377	-2012940	3363	329 13 65.3	40.4	0.61	50556	
17.5	8540538	9934	-4571231	2175	-1983345	3771	329 43 79.3	54.4	0.58	51041	
18.0	8584991	4395	-4502670	3621	-1953597	4026	330 14 33.0	8.0	0.55	51530	
18.5	8628790	8202	-4433763	4721	-1923699	4131	330 44 46.4	21.3	0.52	52024	
19.0	8671932	1351	-4364516	5481	-1893653	4088	331 14 59.4	34.2	0.48	52523	
19.5	8714414	3841	-4294933	5905	-1863461	3899	331 44 72.1	46.8	0.43	53025	
20.0	8756232	5667	-4225020	5999	-1833124	3565	332 14 84.4	59.0	0.37	53531	
20.5	8797384	6827	-4154781	5767	-1802646	3090	332 45 36.4	10.9	0.31	54040	
21.0	8837867	7318	-4084222	5215	-1772028	2474	333 15 48.0	22.5	0.25	54553	
21.5	8877677	7136	-4013347	4347	-1741274	1723	333 45 59.3	33.8	0.19	55069	
22.0	8916810	6279	-3942162	3169	-1710386	0838	334 15 70.3	44.7	0.12	55588	
22.5	8955263	4741	-3870672	1686	-1679366	9820	334 45 80.9	55.3	-0.06	56110	
23.0	8993033	2519	-3798883	9903	-1648216	8672	335 16 31.1	5.3	+0.01	56635	
23.5	9030118	9611	-3726801	7828	-1616934	7398	335 46 41.0	15.3	0.08	57162	
24.0	9066513	6016	-3654431	5464	-1585537	5999	336 16 50.5	24.7	0.14	57691	
24.5	9102216	1728	-3581779	2819	-1554012	4476	336 46 59.7	33.8	0.19	58222	
25.0	9137225	6746	-3508851	9897	-1522368	2834	337 16 68.4	42.5	0.24	58755	
25.5	9171537	1067	-3435652	6705	-1490608	1077	337 46 76.8	50.8	0.29	59290	
26.0	9205148	4687	-3362189	3248	-1458733	9204	338 16 84.7	58.7	0.33	59827	
26.5	9238057	7605	-3288467	9532	-1426744	7217	338 47 32.3	6.2	0.37	60365	
27.0	9270259	9816	-3214492	5563	-1394646	5121	339 17 39.4	13.3	0.41	60905	
27.5	9301754	1320	-3140271	1348	-1362442	2920	339 47 46.1	20.0	0.44	61446	
28.0	9332538	2114	-3065809	6892	-1330135	0615	340 17 52.4	26.2	0.46	61988	
28.5	9362609	2195	-2991112	2201	-1297727	8209	340 47 58.2	32.0	0.47	62531	
29.0	9391966	1561	-2916187	7281	-1265219	5703	341 17 63.6	37.3	0.47	63076	
29.5	9420606	0210	-2841042	2140	-1232616	3102	341 47 68.5	42.1	0.46	63622	
30.0	9448528	8142	-2765681	6786	-1199919	0407	342 17 72.8	46.4	0.45	64170	
30.5	9475730	5354	-2690112	1223	-1167132	7622	342 47 76.7	50.3	0.43	64719	
31.0	+9502210	1844	-2614339	5455	-1134257	4749	343 17 80.1	53.7	+0.40	65269	

NOTE. — + denotes a change in the preceding figure.

Date. 1881.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\beta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .
Mar. 1.0	+ .9391966	1561	-.2916187	7281	-.1265219	5703	341° 17' 63.6	37.3	+0.47	9.99
1.5	.9420606	0210	.2841042	2140	.1232616	3102	341 47 68.5	42.1	0.46	63076
2.0	.9448528	8142	.2765681	6786	.1199919	4047	342 17 72.8	46.4	0.45	63622
2.5	.9475730	5354	.2690112	1223	.1167132	7622	342 47 76.7	50.3	0.43	64170
3.0	.9502210	1844	.2614339	5455	.1134257	4749	343 17 80.1	53.7	0.40	64719
3.5	.9527965	7609	.2538370	9491	.1101297	1791	343 47 83.0	56.5	0.37	65269
4.0	.9552994	2648	.2462209	3335	.1068255	8751	344 17 85.3	58.8	0.33	65819
4.5	.9577296	6960	.2385864	6995	.1035134	5632	344 48 27.2	0.6	0.29	66371
5.0	.9600870	0544	.2309339	4075	.1001936	2436	345 18 28.5	1.8	0.24	66925
5.5	.9623715	3399	.2232643	3784	.0968664	9166	345 48 29.3	2.5	0.18	67481
6.0	.9645829	5524	.2155781	6927	.0935320	5824	346 18 29.5	2.7	0.12	68038
6.5	.9667211	6917	.2078760	9911	.0901907	2413	346 48 29.2	2.4	+0.06	68596
7.0	.9687961	7577	.2001585	2741	.0868427	8934	347 18 28.3	1.5	-0.01	69156
7.5	.9707778	7504	.1924262	5423	.0834882	5391	347 48 26.9	0.0	0.07	69718
8.0	.9726962	6698	.1846797	7962	.0801275	1786	348 17 84.9	57.9	0.14	70282
8.5	.9745410	5157	.1769196	4066	.0767610	8123	348 47 82.4	55.3	0.21	70848
9.0	.9763122	2880	.1691466	2640	.0733889	4403	349 17 79.3	52.2	0.28	71416
9.5	.9780099	9868	.1613613	4791	.0700114	0630	349 47 75.7	48.6	0.35	71986
10.0	.9796340	6119	.1535641	6826	.0666288	6806	350 17 71.5	44.4	0.41	72559
10.5	.9811845	1635	.1457557	8744	.0632413	2932	350 47 66.8	39.6	0.47	73135
11.0	.9826613	6414	.1379367	4058	.0598491	9011	351 17 61.6	34.3	0.52	73714
11.5	.9840644	0456	.1301076	2371	.0564525	5047	351 47 55.8	28.5	0.57	74295
12.0	.9853937	3760	.1222689	3888	.0530517	1041	352 17 49.4	22.1	0.61	74879
12.5	.9866492	6326	.1144211	5414	.0496470	6995	352 47 42.6	15.2	0.64	75466
13.0	.9878309	8154	.1065648	6354	.0462386	2912	353 17 35.2	7.7	0.67	76056
13.5	.9889387	9243	.0987008	8218	.0428268	8796	353 46 87.3	59.8	0.69	76649
14.0	.9899724	9592	.0908296	9509	.0394118	4647	354 16 78.9	51.3	0.71	77245
14.5	.9909322	9200	.0829518	40734	.0359939	4069	354 46 70.0	42.3	0.72	77844
15.0	.9918179	8068	.0750679	1898	.0325734	6265	355 16 60.5	32.8	0.72	78446
15.5	.9926296	6196	.0671784	3006	.0291504	2036	355 46 50.5	22.8	0.71	79051
16.0	.9933672	3584	.0592838	4063	.0257251	7784	356 16 40.1	12.3	0.69	79659
16.5	.9940307	0231	.0513847	5075	.0222978	3512	356 46 29.2	1.3	0.67	80269
17.0	.9946200	6136	.0434816	6047	.0189687	9222	357 15 77.8	49.9	0.64	80882
17.5	.9951352	1300	.0355751	6985	.0154381	4917	357 45 65.9	38.0	0.60	81498
18.0	.9955762	5721	.0276657	7894	.0120062	0599	358 15 53.6	25.6	0.56	82116
18.5	.9959430	9401	.0197541	8780	.0085734	6272	358 45 40.8	12.8	0.51	82737
19.0	.9962355	2338	.0118407	9648	.0051397	1936	359 14 87.6	59.5	0.46	83360
19.5	.9964538	4532	-.0039261	40505	-.0017056	7596	359 44 73.9	45.8	0.40	83985
20.0	.9965978	5984	+ .0039691	8645	+ .0017299	6748	0 14 59.8	31.6	0.34	84612
20.5	.9966676	6694	.0119044	7796	.0051633	1091	0 44 45.3	17.1	0.28	85241
21.0	.9966631	6661	.0198191	6941	.0085976	5434	1 14 30.3	2.1	0.22	85871
21.5	.9965842	5844	.0277327	6075	.0120314	9771	1 43 74.9	46.6	0.16	86503
22.0	.9964309	4363	.0356446	5192	.0154645	4101	2 13 59.0	30.7	0.10	87136
22.5	.9962033	2099	.0435542	4286	.0188965	8421	2 43 42.7	14.3	-0.03	87770
23.0	.9959014	9092	.0514608	3351	.0223273	2729	3 12 85.9	57.5	+0.03	88405
23.5	.9955251	5341	.0593640	2381	.0257565	7020	3 42 68.7	40.3	0.09	89041
24.0	.9950745	0847	.0672632	1372	.0291841	1295	4 12 51.1	22.6	0.15	89677
24.5	.9945496	5610	.0751577	0315	.0326095	5549	4 42 33.0	4.5	0.20	90314
25.0	.9939505	9631	.0830469	9206	.0360326	9780	5 11 74.5	45.9	0.25	90950
25.5	.9932771	2009	.0909302	8038	.0394531	3965	5 41 55.5	26.9	0.29	91586
26.0	.9925295	5445	.0988069	6804	.0428707	8161	6 11 36.0	7.4	0.32	92221
26.5	.9917078	7240	.1066765	5499	.0462852	2306	6 40 76.1	47.4	0.35	92856
27.0	.9908120	8294	.1145383	4116	.0496964	6418	7 10 55.7	26.9	0.37	93490
27.5	.9898423	8609	.1223919	2651	.0531039	0493	7 40 34.8	6.0	0.38	94123
28.0	.9887986	8184	.1302364	1095	.0565075	4529	8 9 73.5	44.6	0.39	94755
28.5	.9876812	7022	.1380715	9445	.0599069	8523	8 39 51.7	22.8	0.39	95386
29.0	.9864901	5124	.1458966	7696	.0633018	2472	9 9 29.4	0.4	0.38	96016
29.5	.9852255	2490	.1537109	5838	.0666920	6374	9 38 66.6	37.6	0.36	96644
30.0	.9838875	9122	.1615136	3865	.0700772	0226	10 8 43.3	14.2	0.33	97271
30.5	.9824762	5021	.1693042	1770	.0734571	4025	10 37 79.5	50.4	0.30	97897
31.0	.9809918	0189	.1770822	9550	.0768315	7770	11 7 55.1	26.0	0.26	98522
31.5	+ .9794344	4628	+ .1848468	7195	+ .0802001	1456	11 37 30.2	1.1	+0.21	99145

NOTE.—The accented letters correspond to the mean equinox and equator of January 0.0.

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Date. 1881.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\beta = \odot$'s Latitude.	Log. Rad. Vect. — ρ .
Apr. 1.0	+ .9778042	8339	+ .1925974	4701	+ .0835626	5081	12° 6' 64.7	35.6	+ 0.16	0.00
1.5	.9761013	1322	.2003336	2063	.0869188	8644	12 36 38.7	9.5	0.11	01003
2.0	.9743260	3582	.2090546	.9273	.0902684	2141	13 5 72.1	42.9	+ 0.05	01619
2.5	.9724784	5118	.2157600	6327	.0936112	5569	13 35 45.0	15.7	— 0.01	02234
3.0	.9705587	5934	.2234492	3219	.0969469	8927	14 4 77.3	48.0	0.08	02848
3.5	.9685672	6031	.2311215	.9942	.1002753	2212	14 34 42.1	19.7	0.14	03461
4.0	.9665040	5412	.2387764	6492	.1035961	5421	15 3 80.2	50.8	0.21	04072
4.5	.9643695	4079	.2464133	2861	.1069091	8551	15 33 50.8	21.3	0.28	04682
5.0	.9621639	2036	.2540317	.9046	.1102141	1602	16 2 80.8	51.3	0.35	05290
5.5	.9598875	9285	.2616310	5039	.1135108	4570	16 32 50.3	20.7	0.42	05898
6.0	.9575404	5828	.2692107	0837	.1167991	7454	17 1 79.2	49.5	0.48	06505
6.5	.9551229	1666	.2767702	6433	.1200786	0250	17 31 47.5	17.8	0.54	07112
7.0	.9526353	6801	.2843090	1822	.1233491	2956	18 0 75.2	45.4	0.60	07718
7.5	.9500778	1238	.2918266	6999	.1266104	5570	18 30 42.3	12.5	0.65	08324
8.0	.9474507	4980	.2993224	1958	.1298623	8090	18 59 68.9	39.0	0.60	08930
8.5	.9447542	8027	.3067959	6694	.1331046	0514	19 29 34.9	5.0	0.73	09536
9.0	.9419886	10384	.3142465	1202	.1363370	2839	19 58 60.3	30.4	0.76	10141
9.5	.9391541	2052	.3216738	5476	.1395594	5064	20 27 85.2	55.2	0.78	10747
10.0	.9362510	3034	.3290773	.9513	.1427715	7186	20 57 49.5	19.4	0.79	11352
10.5	.9332797	3333	.3364565	3306	.1459731	9203	21 26 73.3	43.1	0.79	11958
11.0	.9302403	2952	.3438109	6852	.1491640	1113	21 56 36.5	6.3	0.79	12564
11.5	.9271330	1891	.3511400	0145	.1523439	2913	22 25 59.2	29.0	0.79	13170
12.0	.9239580	10154	.3584435	3182	.1555127	4603	22 54 81.4	51.2	0.78	13776
12.5	.9207156	7742	.3657209	5958	.1586701	6178	23 24 43.1	12.8	0.76	14382
13.0	.9174063	4662	.3729715	8466	.1618157	7637	23 53 64.3	33.9	0.73	14989
13.5	.9140303	0915	.3801950	0703	.1649499	8979	24 22 85.0	54.5	0.70	15596
14.0	.9105877	6502	.3873909	2664	.1680722	0203	24 52 45.2	14.7	0.67	16203
14.5	.9070787	1424	.3945587	4344	.1711822	1305	25 21 64.9	34.4	0.62	16810
15.0	.9035037	5687	.4016977	5737	.1742798	2283	25 50 84.2	53.6	0.57	17418
15.5	.8998631	9294	.4088076	6838	.1773647	3134	26 20 43.0	12.4	0.52	18025
16.0	.8961569	2245	.4158878	7643	.1804368	3857	26 49 61.3	30.6	0.47	18632
16.5	.8923856	4545	.4229379	8146	.1834959	4450	27 18 79.1	48.4	0.41	19239
17.0	.8885494	6195	.4299574	8344	.1865417	4910	27 48 36.5	5.7	0.35	19845
17.5	.8846485	7199	.4369458	8231	.1895741	5236	28 17 53.5	22.6	0.29	20451
18.0	.8806830	7557	.4439028	7804	.1925928	5425	28 46 70.0	39.1	0.22	21057
18.5	.8766534	7273	.4508279	7058	.1955977	5476	29 15 86.2	55.2	0.16	21662
19.0	.8725594	6351	.4577206	5988	.1985885	5386	29 45 41.9	10.9	0.09	22266
19.5	.8684028	4793	.4645805	4590	.2015650	5153	30 14 57.3	26.2	— 0.03	22868
20.0	.8641822	2600	.4714069	2858	.2045270	4775	30 43 72.2	41.1	+ 0.02	23469
20.5	.8598986	9776	.4781993	0785	.2074743	4250	31 12 86.8	55.6	0.07	24068
21.0	.8555521	6324	.4849573	8368	.2104065	3574	31 42 41.0	9.7	0.11	24665
21.5	.8511431	2247	.4916802	5601	.2133236	2747	32 11 54.8	23.5	0.15	25260
22.0	.8466719	7548	.4983677	2480	.2162252	1766	32 40 68.2	36.8	0.19	25853
22.5	.8421389	2230	.5050192	.8999	.2191112	0628	33 9 81.1	49.7	0.22	26443
23.0	.8375445	6299	.5116343	5154	.2219812	9330	33 39 33.6	2.1	0.24	27031
23.5	.8328889	9756	.5182124	0939	.2248352	7873	34 8 45.7	14.2	0.26	27616
24.0	.8281725	2604	.5247529	6348	.2276730	6254	34 37 57.5	25.9	0.27	28197
24.5	.8233956	4848	.5312555	1378	.2304942	4469	35 6 68.9	37.2	0.27	28776
25.0	.8185585	6489	.5377195	6022	.2332988	2517	35 35 79.8	48.0	0.27	29351
25.5	.8136616	7533	.5441447	0278	.2360863	0395	36 4 90.3	58.5	0.26	29923
26.0	.8087054	7983	.5505304	4140	.2388567	8102	36 34 40.4	8.6	0.24	30491
26.5	.8036904	7845	.5568762	7602	.2416097	5635	37 3 50.1	18.2	0.22	31056
27.0	.7986167	7121	.5631817	0662	.2443451	2992	37 32 59.3	27.4	0.19	31617
27.5	.7934849	5816	.5694462	3312	.2470628	0172	38 1 68.1	36.1	0.15	32174
28.0	.7883293	3932	.5756692	5547	.2497624	7171	38 30 76.5	44.4	0.10	32727
28.5	.7830483	1474	.5818503	7363	.2524438	3988	38 59 84.5	52.3	+ 0.05	33276
29.0	.7777443	8447	.5879891	8756	.2551069	0622	39 28 92.0	59.8	— 0.01	33821
29.5	.7723839	4856	.5940852	.9722	.2577515	7071	39 58 39.0	6.7	0.07	34361
30.0	.7669674	10703	.6001381	0256	.2603773	3333	40 27 45.6	13.2	0.14	34898
30.5	+ .7614952	5994	+ .6061473	0353	+ .2629841	9404	40 56 51.7	19.3	— 0.21	35431

NOTE. — : denotes a change in the preceding figure.

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Date. 1881.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\beta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .
May 1.0	+7559679	:0733	+6121124	0010	+2655717	5283	41° 25' 57.4"	24.9	-0.28	35959
1.5	.7503862	4928	.6180330	:9221	.2681400	0970	41 54 62.6	30.0	0.35	36484
2.0	.7447503	8581	.6239085	7982	.2706888	6462	42 23 67.3	34.7	0.42	37004
2.5	.7390606	1697	.6297387	6290	.2732179	1756	42 52 71.5	38.9	0.49	37521
3.0	.7333176	4279	.6355231	4140	.2757270	6850	43 21 75.3	42.6	0.55	38034
3.5	.7275218	6333	.6412613	1528	.2782161	1745	43 50 78.6	45.8	0.61	38544
4.0	.7216736	7863	.6469529	8450	.2806852	6439	44 19 81.4	48.5	0.67	39049
4.5	.7157737	8876	.6525976	4903	.2831339	0930	44 48 83.7	50.7	0.72	39551
5.0	.7098226	9377	.6581950	0884	.2855622	5217	45 17 85.5	52.4	0.76	40050
5.5	.7038207	9370	.6637449	6389	.2879698	9297	45 46 86.8	53.7	0.80	40546
6.0	.6977684	8859	.6692467	1414	.2903567	3170	46 15 87.7	54.5	0.84	41039
6.5	.6916663	7850	.6747002	5855	.2927226	6833	46 44 88.1	54.9	0.87	41529
7.0	.6855149	6348	.6801049	0009	.2950673	0284	47 13 88.0	54.7	0.90	42017
7.5	.6793147	4358	.6854605	3572	.2973907	3522	47 42 87.4	54.1	0.91	42502
8.0	.6730658	1882	.6907667	6641	.2996927	6546	48 11 86.4	53.0	0.92	42984
8.5	.6667692	8927	.6960233	:9214	.3019733	9356	48 40 84.9	51.4	0.92	43464
9.0	.6604247	5496	.7012300	1288	.3042322	1949	49 9 83.0	49.4	0.91	43941
9.5	.6540337	1596	.7063864	2859	.3064694	4325	49 38 80.6	46.9	0.90	44416
10.0	.6475961	7231	.7114921	3923	.3086846	6481	50 7 77.8	44.0	0.88	44889
10.5	.6411124	2406	.7165468	4477	.3108778	8417	50 36 74.6	40.8	0.85	45360
11.0	.6345831	7125	.7215501	4518	.3130488	0131	51 5 71.0	37.1	0.81	45829
11.5	.6280087	1393	.7265019	4043	.3151974	1621	51 34 66.9	32.9	0.77	46296
12.0	.6213897	5214	.7314017	3049	.3173235	2887	52 3 62.4	28.4	0.72	46761
12.5	.6147264	8593	.7362493	1532	.3194269	3925	52 32 57.6	23.6	0.66	47224
13.0	.6080193	1533	.7410444	:9492	.3215076	4736	53 1 52.4	18.3	0.60	47685
13.5	.6012639	4041	.7457870	6926	.3235655	5320	53 30 46.9	12.7	0.54	48144
14.0	.5944756	6119	.7504767	3831	.3256004	5674	53 59 41.0	6.7	0.47	48601
14.5	.5876398	7773	.7551132	0204	.3276123	5796	54 28 34.8	0.4	0.41	49055
15.0	.5807620	0006	.7596963	6043	.3296009	5687	54 56 88.2	53.8	0.34	49507
15.5	.5738429	9826	.7642255	1343	.3315662	5345	55 25 81.3	46.8	0.28	49957
16.0	.5668828	:0236	.7687004	6101	.3335080	4768	55 54 74.1	39.5	0.21	50405
16.5	.5598822	:0241	.7731208	0313	.3354261	3954	56 23 66.6	32.0	0.15	50850
17.0	.5528415	9845	.7774862	3976	.3373203	2901	56 52 58.8	24.1	0.09	51293
17.5	.5457613	9054	.7817963	7086	.3391906	1609	57 21 50.7	15.9	-0.03	51733
18.0	.5386420	7872	.7860508	:9640	.3410367	0075	57 50 42.3	7.4	+0.02	52170
18.5	.5314840	6303	.7902495	1636	.3428585	8298	58 18 93.6	58.6	0.06	52604
19.0	.5242878	4352	.7943921	3071	.3446559	6277	58 47 84.7	49.6	0.10	53034
19.5	.5170539	2024	.7984783	3942	.3464289	4012	59 16 75.5	40.3	0.13	53461
20.0	.5097829	9325	.8025079	4247	.3481773	1500	59 45 66.1	30.8	0.16	53883
20.5	.5024752	6259	.8064805	3982	.3499009	8742	60 14 56.4	21.1	0.17	54302
21.0	.4951314	2832	.8103958	3145	.3515996	5734	60 43 46.5	11.1	0.19	54718
21.5	.4877519	9048	.8142535	1731	.3532732	2475	61 12 36.3	0.8	0.19	55129
22.0	.4803373	4912	.8180534	:9740	.3549216	8065	61 40 85.8	50.3	0.19	55535
22.5	.4728880	:0430	.8217951	7167	.3565448	5202	62 9 75.1	39.5	0.18	55937
23.0	.4654047	5607	.8254784	4010	.3581427	1186	62 38 64.2	28.5	0.16	56334
23.5	.4578878	:0448	.8291027	0263	.3597150	6914	63 7 53.0	17.2	0.13	56726
24.0	.4503379	4950	.8326678	5924	.3612616	2386	63 36 41.6	5.7	0.10	57112
24.5	.4427556	9146	.8361736	0992	.3627824	7599	64 4 89.9	53.9	0.06	57494
25.0	.4351416	3016	.8396200	5466	.3642773	2553	64 33 78.0	41.9	+0.01	57870
25.5	.4274964	6574	.8420066	:9342	.3657463	7248	65 2 65.8	29.7	-0.04	58241
26.0	.4198205	9825	.8463331	2617	.3671892	1683	65 31 53.3	17.2	0.09	58606
26.5	.4121145	2775	.8495990	5287	.3686058	5854	66 0 40.6	4.4	0.15	58966
27.0	.4043790	5430	.8528043	7351	.3699961	9762	66 28 87.6	51.3	0.22	59320
27.5	.3966146	7796	.8559487	8806	.3713599	3406	66 57 74.3	37.9	0.28	59668
28.0	.3888218	9877	.8590321	:9651	.3726972	6785	67 26 60.8	24.3	0.35	60010
28.5	.3810012	1681	.8620541	:9882	.3740079	:9897	67 55 47.0	10.4	0.41	60347
29.0	.3731535	3213	.8650145	:9497	.3752918	2742	68 23 92.9	56.2	0.48	60677
29.5	.3652793	4481	.8679131	8494	.3765490	5320	68 52 78.5	41.7	0.54	61002
30.0	.3573792	5489	.8707497	6872	.3777793	7629	69 21 63.9	27.0	0.61	61320
30.5	.3494537	6244	.8735243	4629	.3789827	9668	69 50 49.0	12.0	0.67	61634
31.0	.3415034	6750	.8762365	1762	.3801591	1438	70 18 93.8	56.8	0.74	61941
31.5	+3335290	7015	+8788862	8271	+3813084	2037	70 47 78.3	41.3	-0.79	62243

NOTE.—The accented letters correspond to the mean equinox and equator of January 0.0.

SUN'S COÖRDINATES, 1881. 395

Date. 1881.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\beta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .
June 1.0	+3255312	7046	+8814733	4154	+3824305	4164	71° 16' 62.5"	25.4	—0.85	62529
1.5	.3175107	6850	.8839977	9410	.3835254	5119	71 45 46.4	9.2	0.89	62830
2.0	.3094681	6433	.8864591	4036	.3845930	5801	72 13 89.9	52.6	0.93	63115
2.5	.3014040	5801	.8888574	8031	.3856333	6210	72 42 73.1	35.7	0.96	63393
3.0	.2933188	4957	.8911926	1395	.3866463	6346	73 11 56.1	18.6	0.98	63670
3.5	.2852131	3909	.8934646	4127	.3876320	6209	73 40 38.8	1.2	0.99	63941
4.0	.2770875	2661	.8956732	6225	.3885902	5797	74 8 81.2	43.5	0.99	64207
4.5	.2689427	1221	.8978183	7688	.3895209	5210	74 37 63.3	25.6	0.99	64468
5.0	.2607792	9594	.8998997	8515	.3904239	4147	75 6 45.1	7.3	0.99	64725
5.5	.2525977	7787	.9019174	8704	.3912994	2908	75 34 86.6	48.7	0.97	64978
6.0	.2443988	5806	.9038713	8926	.3921472	1392	76 3 67.9	29.9	0.95	65226
6.5	.2361830	3656	.9057614	7170	.3929673	9599	76 32 48.9	10.8	0.92	65470
7.0	.2279508	1342	.9075876	5445	.3937597	7530	77 0 89.6	51.4	0.89	65710
7.5	.2197029	8871	.9093498	3080	.3945243	5182	77 29 70.1	31.8	0.85	65947
8.0	.2114398	6247	.9110479	0074	.3952612	2557	77 58 50.3	11.9	0.80	66180
8.5	.2031680	3477	.9126818	6426	.3959703	9655	78 26 90.3	51.8	0.75	66409
9.0	.1948701	0565	.9142514	2135	.3966515	6474	78 55 70.1	31.5	0.70	66635
9.5	.1865646	7517	.9157568	7202	.3973048	3013	79 24 49.7	11.1	0.64	66857
10.0	.1782461	4339	.9171979	1626	.3979303	9274	79 52 89.1	50.4	0.57	67076
10.5	.1699152	1037	.9185745	5405	.3985278	5255	80 21 68.3	29.6	0.51	67292
11.0	.1615725	7617	.9198865	8539	.3990973	0957	80 50 47.3	8.5	0.44	67504
11.5	.1532186	4085	.9211339	1026	.3996388	6378	81 18 86.1	47.2	0.38	67713
12.0	.1448541	0447	.9223166	2867	.4001523	1519	81 47 64.7	25.7	0.31	67919
12.5	.1364794	6707	.9234346	4061	.4006377	6380	82 16 43.2	4.1	0.25	68122
13.0	.1280950	2869	.9244878	4607	.4010949	0959	82 44 81.5	42.3	0.19	68321
13.5	.1197015	8940	.9254761	4504	.4015240	5256	83 13 59.7	20.4	0.13	68516
14.0	.1112993	4924	.9263995	3752	.4019249	9271	83 41 97.8	58.4	0.07	68708
14.5	.1028890	0827	.9272578	2349	.4022976	3005	84 10 75.8	36.4	—0.02	68896
15.0	.0944711	6654	.9280511	0296	.4026420	6456	84 39 53.7	14.2	+0.02	69080
15.5	.0860463	2412	.9287792	7591	.4029581	9623	85 7 91.5	51.9	0.05	69261
16.0	.0776151	8105	.9294421	4235	.4032458	2507	85 36 69.3	29.6	0.08	69437
16.5	.0691782	3741	.9300398	0226	.4035051	5107	86 5 47.0	7.2	0.10	69610
17.0	.0607361	9326	.9305721	5564	.4037360	7423	86 33 84.6	44.7	0.12	69778
17.5	.0522893	4863	.9310389	0246	.4039385	9455	87 2 62.2	22.2	0.12	69942
18.0	.0438384	0359	.9314402	4274	.4041126	1202	87 30 99.7	59.6	0.12	70101
18.5	.0353840	5820	.9317760	7647	.4042582	2665	87 59 77.2	37.0	0.12	70256
19.0	.0269267	1252	.9320461	0363	.4043753	3843	88 28 54.6	14.3	0.11	70405
19.5	.0184672	6662	.9322505	2422	.4044639	4735	88 56 92.0	51.7	0.09	70550
20.0	.0100060	2055	.9323892	3824	.4045240	5343	89 25 69.4	29.0	0.06	70689
20.5	+0.015438	7438	.9324621	4568	.4045555	5665	89 54 46.7	6.2	+0.03	70823
21.0	—0.069189	7185	.9324692	4654	.4045583	5700	90 22 84.0	43.4	—0.01	70951
21.5	.0153814	1806	.9324103	4081	.4045325	5449	90 51 61.3	20.6	0.06	71073
22.0	.0238432	6420	.9322856	2850	.4044780	4911	91 19 98.5	57.7	0.12	71190
22.5	.0323037	1021	.9320950	0960	.4043949	4087	91 48 75.7	34.8	0.17	71301
23.0	.0407621	5601	.9318385	8411	.4042832	2977	92 17 52.9	11.9	0.23	71405
23.5	.0492180	0156	.9315161	5202	.4041429	1581	92 45 90.1	49.0	0.29	71505
24.0	.0576706	4679	.9311278	1335	.4039741	9900	93 14 67.2	26.0	0.35	71595
24.5	.0661192	9161	.9306735	6808	.4037767	7933	93 43 44.3	3.1	0.41	71680
25.0	.0745631	3597	.9301534	1623	.4035507	5680	94 11 81.3	40.0	0.48	71758
25.5	.0830018	7981	.9295673	5778	.4032962	3142	94 40 58.3	16.9	0.54	71830
26.0	.0914347	2307	.9289153	9274	.4030131	0318	95 8 95.2	53.7	0.61	71895
26.5	.0998612	6569	.9281975	2112	.4027014	7208	95 37 72.1	30.5	0.67	71953
27.0	.1082806	0760	.9274140	4293	.4023611	3812	96 6 49.0	7.3	0.73	72005
27.5	.1166922	4873	.9265648	5817	.4019924	0131	96 34 85.8	44.0	0.79	72050
28.0	.1250955	8904	.9256501	6686	.4015953	6167	97 3 62.5	20.6	0.84	72089
28.5	.1334898	2845	.9246699	6900	.4011698	1919	97 31 99.2	57.2	0.88	72122
29.0	.1418745	6690	.9236243	6461	.4007159	7387	98 0 75.8	33.7	0.92	72148
29.5	.1502489	0432	.9225135	5369	.4002338	2573	98 29 52.3	10.2	0.95	72168
30.0	.1586124	4066	.9213375	3625	.3997235	7477	98 57 88.8	46.6	0.98	72181
30.5	—0.1669644	7584	+0.9200964	1230	+0.3991850	2099	99 26 65.2	23.0	—0.99	72188

NOTE. — : denotes a change in the preceding figure.

Date. 1881.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.				
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\beta = \odot$'s Latitude.	Log. Rad. Vect. - ρ .	
July 1.0	-.1753043	0982	+.9187904	8186	+.3986182	6438	99° 54' 101.6	59.3	-0.99	72189	
1.5	.1836314	4252	.9174195	4494	.3980234	0497	100 23 77.9	35.5	0.99	72184	
2.0	.1919454	7391	.9159840	0156	.3974006	4276	100 52 54.1	11.6	0.98	72174	
2.5	.2002455	0391	.9144840	5172	.3967408	7775	101 20 90.3	47.7	0.97	72159	
3.0	.2085311	3246	.9129196	9544	.3960712	0996	101 49 66.4	23.7	0.95	72138	
3.5	.2168016	5951	.9112909	3274	.3953648	3939	102 17 102.4	59.6	0.92	72113	
4.0	.2250563	9498	.9095981	6363	.3946306	6604	102 46 78.4	35.5	0.89	72082	
4.5	.2332948	0883	.9078414	8813	.3938686	8991	103 15 54.3	11.3	0.85	72045	
5.0	.2415164	3099	.9060209	0625	.3930790	1102	103 43 90.1	47.1	0.81	72003	
5.5	.2497207	5142	.9041368	1800	.3922618	2937	104 12 65.9	22.8	0.75	71957	
6.0	.2579707	7006	.9021892	2341	.3914172	4498	104 40 101.7	58.5	0.69	71906	
6.5	.2660749	8685	.9001785	2251	.3905451	5784	105 9 77.4	34.1	0.63	71851	
7.0	.2742239	0176	.8981048	1531	.3896457	6797	105 38 53.1	9.7	0.57	71793	
7.5	.2823535	1473	.8959681	0181	.3887190	7537	106 6 88.8	45.3	0.51	71730	
8.0	.2904631	2570	.8937687	8204	.3877651	8005	106 35 64.5	20.9	0.44	71663	
8.5	.2985523	3463	.8915066	5600	.3867841	8201	107 3 100.3	56.6	0.37	71593	
9.0	.3066204	4146	.8891820	2371	.3857759	8127	107 32 76.1	32.3	0.30	71518	
9.5	.3146670	4613	.8867952	8520	.3847408	7783	108 1 51.9	8.0	0.23	71440	
10.0	.3226914	4859	.8843463	4048	.3836787	7169	108 29 87.8	43.8	0.17	71358	
10.5	.3306931	4878	.8818356	8958	.3825897	6286	108 58 63.7	19.6	0.11	71273	
11.0	.3386715	4664	.8792631	3250	.3814739	5135	109 26 99.7	55.5	0.06	71184	
11.5	.3466261	4212	.8766292	6928	.3803314	3717	109 55 75.7	31.4	-0.01	71092	
12.0	.3545562	3518	.8739339	9992	.3791623	2033	110 24 51.8	7.4	+0.04	70996	
12.5	.3624615	2572	.8711775	2445	.3779666	0083	110 52 87.9	43.5	0.08	70896	
13.0	.3703415	1375	.8683600	4287	.3767444	7868	111 21 64.1	19.7	0.12	70792	
13.5	.3781959	0922	.8654816	5520	.3754958	5389	111 49 100.5	56.0	0.15	70685	
14.0	.3860240	08206	.8625424	6145	.3742208	2646	112 18 77.0	32.4	0.17	70574	
14.5	.3938252	6221	.8595426	6164	.3729194	9639	112 47 53.7	9.0	0.18	70460	
15.0	.4015991	3964	.8564823	5578	.3715917	6369	113 15 90.5	45.7	0.19	70341	
15.5	.4093452	1429	.8533618	4390	.3702378	2837	113 44 67.5	22.6	0.19	70219	
16.0	.4170629	08610	.8501811	2600	.3688578	9044	114 12 104.7	59.7	0.18	70092	
16.5	.4247516	5501	.8469406	0212	.3674518	4991	114 41 82.0	36.9	0.16	69961	
17.0	.4324106	2095	.8436404	7227	.3660198	0677	115 10 59.5	14.3	0.13	69826	
17.5	.4400397	08390	.8402807	3647	.3645619	6105	115 38 97.2	51.9	0.10	69686	
18.0	.4476380	4378	.8368618	9475	.3630782	1275	116 7 75.1	29.8	0.06	69541	
18.5	.4552052	0055	.8333837	4711	.3615690	6189	116 36 53.2	7.9	+0.02	69391	
19.0	.4627406	5414	.8298466	9357	.3600342	0848	117 4 91.5	46.1	-0.03	69237	
19.5	.4702438	0451	.8262508	3416	.3584740	5253	117 33 70.0	24.5	0.08	69078	
20.0	.4777141	5160	.8225965	6890	.3568883	9403	118 2 48.7	3.1	0.14	68913	
20.5	.4851509	09533	.8188839	9781	.3552773	3299	118 30 87.6	41.9	0.20	68742	
21.0	.4925535	3565	.8151132	2091	.3536410	6943	118 59 66.7	20.9	0.26	68566	
21.5	.4999216	7252	.8112846	3822	.3519796	0336	119 28 46.0	0.1	0.32	68384	
22.0	.5072543	0585	.8073983	4976	.3502931	3478	119 56 85.5	39.5	0.39	68196	
22.5	.5145514	3562	.8034547	5557	.3485818	6371	120 25 65.2	19.2	0.45	68002	
23.0	.5218122	6176	.7994538	5565	.3468457	9016	120 53 105.1	59.1	0.51	67802	
23.5	.5290364	8425	.7953961	5005	.3450819	1415	121 22 85.3	39.2	0.57	67595	
24.0	.5362232	0300	.7912819	3880	.3432996	3569	121 51 65.7	19.5	0.63	67382	
24.5	.5433721	1796	.7871113	2191	.3414900	5479	122 20 46.3	0.0	0.69	67163	
25.0	.5504624	2906	.7828851	9945	.3396561	7146	122 48 87.0	40.6	0.74	66938	
25.5	.5575537	3626	.7786033	7143	.3377980	8572	123 17 67.9	21.4	0.78	66707	
26.0	.5645852	3949	.7742659	3786	.3359161	9760	123 46 49.1	2.5	0.82	66469	
26.5	.5715767	3872	.7698734	9878	.3340103	0708	124 14 90.4	43.8	0.85	66225	
27.0	.5785274	3387	.7654264	5424	.3320808	1419	124 43 71.5	25.2	0.88	65975	
27.5	.5854370	2491	.7609250	0427	.3301278	1896	125 12 53.9	6.8	0.90	65719	
28.0	.5923047	1176	.7563696	4889	.3281514	2138	125 40 95.4	48.6	0.91	65457	
28.5	.5991302	09439	.7517605	8815	.3261517	2147	126 9 77.4	30.6	0.91	65189	
29.0	.6059129	7275	.7470980	2206	.3241289	1925	126 38 59.6	12.7	0.91	64914	
29.5	.6126523	4678	.7423826	5069	.3220832	1475	127 6 101.9	54.9	0.89	64634	
30.0	.6193480	1644	.7376146	7405	.3200147	0796	127 35 84.4	37.3	0.87	64348	
30.5	.6259994	8167	.7327944	9219	.3179236	9891	128 4 67.1	19.9	0.84	64057	
31.0	.6326062	4245	.7279223	0514	.3158101	8762	128 33 50.0	2.7	0.81	63760	
31.5	.6391678	09871	.7229989	1297	.3136742	7409	129 1 93.0	45.7	-0.78	63458	

NOTE.—The accented letters correspond to the mean equinox and equator of January 0.0.

SUN'S COÖRDINATES, 1881. 397

Date. 1881.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\beta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .
Aug. 1.0	-.6456839	5042	+.7180244	1568	+.3115162	5835	129° 30' 76.1	28.8	-0.74	0.00
1.5	.6521538	9751	.7129992	1332	.3093362	4041	129 59 59.4	12.0	0.69	62839
2.0	.6585772	3995	.7079238	10594	.3071344	2029	130 27 102.9	55.4	0.63	62523
2.5	.6649536	7769	.7027984	9356	.3049110	9801	130 56 86.6	39.0	0.57	62202
3.0	.6712826	1070	.6976234	7622	.3026662	7359	131 25 70.4	22.8	0.50	61877
3.5	.6775638	3892	.6923994	5398	.3004001	4704	131 54 54.4	6.7	0.44	61548
4.0	.6837967	6232	.6871265	2684	.2981128	1837	132 22 98.6	50.8	0.37	61215
4.5	.6899810	8086	.6818053	9488	.2958046	8761	132 51 83.0	35.1	0.30	60879
5.0	.6961163	9450	.6764361	5911	.2934755	5476	133 20 67.6	19.6	0.23	60539
5.5	.7022020	0318	.6710192	1658	.2911258	1984	133 49 52.4	4.3	0.16	60195
6.0	.7082379	0689	.6655551	7032	.2887555	8287	134 17 97.4	49.3	0.10	59848
6.5	.7142234	0555	.6600441	1938	.2863649	4387	134 46 82.6	34.5	-0.03	59497
7.0	.7201583	9916	.6544866	6378	.2839541	10285	135 15 68.1	19.9	+0.03	59143
7.5	.7260421	8766	.6488830	10357	.2815233	5983	135 44 53.8	5.5	0.08	58786
8.0	.7318745	7102	.6432337	3879	.2790726	1481	136 12 99.7	51.4	0.14	58427
8.5	.7376552	4921	.6375390	6947	.2766022	6783	136 41 85.9	37.5	0.18	58065
9.0	.7433838	2220	.6317993	9565	.2741122	1889	137 10 72.4	23.9	0.22	57699
9.5	.7490600	8994	.6260149	1736	.2716027	6799	137 39 59.1	10.6	0.25	57331
10.0	.7546832	5239	.6201863	3464	.2690740	1517	138 7 106.2	57.6	0.28	56961
10.5	.7602530	0950	.6143138	4754	.2665263	6046	138 36 93.6	44.9	0.30	56588
11.0	.7657689	6122	.6083979	5609	.2639597	10385	139 5 81.3	32.5	0.31	56212
11.5	.7712308	0754	.6024388	6033	.2613743	4536	139 34 69.3	20.5	0.31	55834
12.0	.7766382	4842	.5964369	6028	.2587703	8501	140 3 57.7	8.8	0.30	55453
12.5	.7819907	8381	.5903926	5599	.2561479	2282	140 31 106.4	57.5	0.28	55069
13.0	.7872980	1368	.5843062	4749	.2535072	5881	141 0 95.5	46.5	0.26	54682
13.5	.7925286	3798	.5781782	3483	.2508484	9298	141 29 84.9	35.8	0.23	54292
14.0	.7977151	5667	.5720089	1804	.2481716	2535	141 58 74.8	25.6	0.20	53900
14.5	.8028441	6971	.5657988	9717	.2454771	5595	142 27 65.0	15.8	0.15	53505
15.0	.8079162	7707	.5595484	7226	.2427650	8479	142 56 55.6	6.3	0.11	53107
15.5	.8129311	7870	.5532578	4334	.2400355	1189	143 24 106.5	57.2	0.06	52705
16.0	.8178883	7457	.5469276	1045	.2372888	3727	143 53 97.9	48.5	+0.01	52299
16.5	.8227874	6463	.5405580	7363	.2345250	6094	144 22 89.7	40.3	-0.05	51890
17.0	.8276280	4884	.5341493	3289	.2317443	8292	144 51 81.9	32.4	0.12	51477
17.5	.8324097	2716	.5277023	8832	.2289470	10323	145 20 74.5	25.0	0.18	51060
18.0	.8371319	9954	.5212172	3994	.2261331	2189	145 49 67.5	17.9	0.25	50638
18.5	.8417945	6595	.5146946	8781	.2233029	3892	146 18 60.9	11.2	0.31	50212
19.0	.8463969	2635	.5081350	3198	.2204565	5433	146 47 54.8	5.0	0.37	49782
19.5	.8509390	8071	.5015387	7248	.2175943	6816	147 15 109.0	59.2	0.43	49348
20.0	.8554202	2899	.4949062	10935	.2147164	8041	147 44 103.7	53.8	0.49	48909
20.5	.8598403	7116	.4882377	4262	.2118230	9112	148 13 98.8	48.9	0.55	48466
21.0	.8641987	0716	.4815340	7237	.2089143	10030	148 42 94.3	44.3	0.60	48018
21.5	.8684952	3697	.4747955	9864	.2059905	10795	149 11 90.2	40.2	0.65	47560
22.0	.8727292	6054	.4680227	2148	.2030518	1412	149 40 86.5	36.4	0.69	47109
22.5	.8769005	7783	.4612161	4094	.2000985	1883	150 9 83.2	33.1	0.72	46647
23.0	.8810086	8881	.4543763	5708	.1971308	2210	150 38 80.3	30.1	0.75	46180
23.5	.8850532	9344	.4475035	6992	.1941489	2395	151 7 77.8	27.6	0.77	45708
24.0	.8890339	9168	.4405984	7952	.1911530	2440	151 36 75.7	25.4	0.78	45230
24.5	.8929505	8351	.4336614	8593	.1881434	2348	152 5 74.0	23.6	0.78	44748
25.0	.8968028	6891	.4266931	8921	.1851201	2119	152 34 72.6	22.2	0.78	44262
25.5	.9005904	4785	.4196941	8942	.1820835	1757	153 3 71.6	21.2	0.77	43770
26.0	.9043131	2030	.4126648	8660	.1790340	1265	153 32 71.1	20.6	0.76	43273
26.5	.9079704	8620	.4056059	8082	.1759717	10616	154 1 70.9	20.4	0.73	42772
27.0	.9115621	4555	.3985179	7212	.1728967	9000	154 30 71.1	20.5	0.70	42267
27.5	.9150879	9831	.3914013	6057	.1698092	9029	154 59 71.6	21.0	0.66	41757
28.0	.9185475	4445	.3842565	4619	.1667096	8036	155 28 72.5	21.8	0.62	41243
28.5	.9219407	8395	.3770842	2906	.1635982	6926	155 57 73.8	23.0	0.57	40725
29.0	.9252672	1679	.3698849	10923	.1604750	5698	156 26 75.4	24.6	0.51	40203
29.5	.9285268	4294	.3626593	8677	.1573404	4355	156 55 77.4	26.6	0.45	39677
30.0	.9317194	6238	.3554078	6172	.1541946	2900	157 24 79.7	28.8	0.39	39148
30.5	.9348445	7507	.3481310	3414	.1510378	1335	157 53 82.3	31.3	0.32	38615
31.0	.9379021	8102	.3408294	10407	.1478702	9662	158 22 85.3	34.3	0.25	38079
31.5	-.9408918	8018	+.3335036	7158	+.1446922	7885	158 51 88.6	37.6	-0.19	37540

NOTE.—t denotes a change in the preceding figure.

Date 1881.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.				
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\beta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .	
Sept. 1.0	-.9436135	7254	+3261542	3673	+1415040	6006	159° 20' 92.3	41.2	-0.12	8.99	
1.5	.9466670	5808	.3187816	9956	.1383057	4027	159 49 96.3	45.1	-0.05	36998	
2.0	.9494522	3679	.3113865	6014	.1350977	1949	160 18 100.7	49.5	+0.02	36453	
2.5	.9521689	0865	.3039692	1850	.1318800	9775	160 47 105.5	54.3	0.08	35906	
3.0	.9548170	7365	.2965303	7469	.1286529	7506	161 16 110.6	59.4	0.14	35356	
3.5	.9573862	3177	.2890704	2878	.1254167	5147	161 46 56.1	4.8	0.19	34806	
4.0	.9599064	8299	.2815899	8081	.1221715	2698	162 15 62.0	10.6	0.24	34252	
4.5	.9623475	2729	.2740895	3085	.1189176	161	162 44 68.3	16.8	0.29	33697	
5.0	.9647192	6466	.2665696	7894	.1156552	7539	163 13 74.9	23.4	0.33	33140	
5.5	.9670213	19507	.2590308	2514	.1123847	4836	163 42 81.9	30.4	0.36	32583	
6.0	.9692537	1851	.2514735	6948	.1091061	2053	164 11 89.3	37.8	0.39	32024	
6.5	.9714162	3496	.2438983	1204	.1058197	9191	164 40 97.2	45.6	0.41	31464	
7.0	.9735086	4440	.2363057	5285	.1025256	6252	165 9 105.5	53.8	0.43	30903	
7.5	.9755309	4683	.2286961	9196	.0992242	3240	165 39 54.2	2.5	0.44	30341	
8.0	.9774829	4223	.2210700	2942	.0959156	156	166 8 63.4	11.6	0.45	29778	
8.5	.9793645	3059	.2134279	6528	.0926000	7002	166 37 73.0	21.2	0.44	29214	
9.0	.9811754	1189	.2057704	9959	.0892776	3780	167 6 83.1	31.2	0.42	28649	
9.5	.9829156	8611	.1980980	3242	.0850488	10494	167 35 93.7	41.8	0.40	28084	
10.0	.9845848	5324	.1904113	6381	.0826136	7144	168 4 104.7	52.7	0.37	27518	
10.5	.9861829	1326	.1827107	9381	.0792724	3734	168 34 56.2	4.2	0.33	26951	
11.0	.9877098	6616	.1749966	2246	.0759253	9264	169 3 68.3	16.2	0.29	26383	
11.5	.9891653	1192	.1672696	4982	.0725726	6739	169 32 80.9	28.8	0.24	25815	
12.0	.9905492	5052	.1595302	7594	.0692145	3160	170 1 94.0	41.8	0.18	25245	
12.5	.9918613	8194	.1517790	10088	.0658513	9529	170 30 107.6	55.4	0.12	24675	
13.0	.9931016	0618	.1440165	2468	.0624831	5848	171 0 61.8	9.5	+0.06	24104	
13.5	.9942699	2322	.1362432	4740	.0591103	2121	171 29 76.5	24.2	-0.01	23532	
14.0	.9953660	3304	.1284597	6910	.0557330	8350	171 58 91.7	39.3	0.07	22959	
14.5	.9963898	3563	.1206665	8983	.0523516	4537	172 27 107.4	55.0	0.13	22384	
15.0	.9973410	3097	.1128642	10964	.0489661	10684	172 57 63.7	11.2	0.19	21808	
15.5	.9982196	1904	.1050533	2860	.0455770	6793	173 26 80.6	28.1	0.25	21231	
16.0	.9990254	9983	.0972344	4675	.0421843	2867	173 55 98.1	45.5	0.31	20652	
16.5	.9997582	7333	.0894080	6415	.0387885	8910	174 25 56.1	3.5	0.36	20071	
17.0	1.0004180	3953	.0815747	8086	.0353896	4923	174 54 74.6	21.9	0.41	19498	
17.5	1.0010046	9840	.0737350	9693	.0319881	10908	175 23 93.6	40.9	0.46	18903	
18.0	1.0015178	4994	.0658896	1242	.0285841	6868	175 53 53.2	0.4	0.50	18316	
18.5	1.0019576	9414	.0580392	2741	.0251779	2807	176 22 73.4	20.5	0.54	17726	
19.0	1.0023240	3100	.0501841	4193	.0217697	8725	176 51 94.1	41.2	0.57	17134	
19.5	1.0026168	6050	.0423252	5607	.0183599	4627	177 21 55.4	2.5	0.60	16540	
20.0	1.0028360	8263	.0344628	6986	.0149486	10515	177 50 77.2	24.2	0.62	15943	
20.5	1.0029814	9739	.0265977	8338	.0115363	6392	178 19 99.5	46.5	0.63	15344	
21.0	1.0030530	0477	.0187304	9667	.0081230	2259	178 49 62.3	9.3	0.63	14742	
21.5	1.0030508	0477	.0108616	10982	.0047091	8120	179 18 85.7	32.6	0.62	14138	
22.0	1.0029746	9737	+0.029918	2286	+0.012946	3976	179 47 109.6	56.4	0.61	13531	
22.5	1.0028244	8257	-.0048783	6413	-.0021196	0167	180 17 73.9	20.7	0.59	12922	
23.0	1.0026002	6038	.0127483	5110	.0055339	4310	180 46 98.9	45.6	0.56	12310	
23.5	1.0023020	3078	.0206171	3797	.0089476	8447	181 16 64.3	11.0	0.53	11695	
24.0	1.0019298	9378	.0284843	2468	.0123607	2578	181 45 90.2	36.8	0.49	11078	
24.5	1.0014837	4939	.0363493	1116	.0157727	6699	182 15 56.6	3.2	0.44	10458	
25.0	1.0009636	9761	.0442115	9737	.0191835	0807	182 44 83.5	30.0	0.38	9836	
25.5	1.0003697	3844	.0520703	8324	.0225927	4900	183 13 110.8	57.3	0.32	9212	
26.0	.9997020	7189	.0599250	6870	.0260003	18977	183 43 78.6	25.0	0.25	8586	
26.5	.9989604	9795	.0677750	5369	.0294057	3032	184 12 106.8	53.2	0.19	7957	
27.0	.9981449	1663	.0756198	3817	.0328089	7064	184 42 75.5	21.9	0.12	7327	
27.5	.9972556	2793	.0834586	2205	.0362095	1071	185 11 104.6	51.0	-0.05	6695	
28.0	.9962926	3185	.0912910	0529	.0396072	5049	185 41 74.2	20.5	+0.02	6061	
28.5	.9952560	2841	.0991162	8781	.0430019	18997	186 10 104.2	50.5	0.09	5425	
29.0	.9941459	1763	.1069338	6957	.0463932	2911	186 40 74.7	20.9	0.16	04789	
29.5	.9929625	9952	.1147431	5050	.0497810	6790	187 9 105.6	51.8	0.23	04151	
30.0	.9917059	7404	.1225435	3055	.0531649	0630	187 39 76.9	23.1	0.29	03513	
30.5	-.9903762	4133	-.1303345	0966	-.0565448	4431	188 8 108.7	54.8	+0.35	02874	

NOTE. — : denotes a change in the preceding figure.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1881.	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\beta = \odot$'s Latitude.	Log. Rad. Vect. $= \rho$.
Oct. 1.0	-.9889734	+0128	-.1381155	+8777	-.0599203	8188	188° 38' 80.9	26.9	+0.40	0.00
1.5	.9874977	5393	.1458861	6484	.0632913	1899	189 7 113.5	59.5	0.45	01595
2.0	.9859491	9930	.1536456	4080	.0666576	5564	189 37 86.6	32.5	0.49	00956
2.5	.9843278	3739	.1613933	1558	.0700188	9178	190 7 60.2	6.0	0.53	00317
3.0	.9826339	6823	.1691288	8915	.0733748	2740	190 36 94.2	40.0	0.56	99678
3.5	.9808675	9181	.1768517	6146	.0767252	6246	191 6 68.7	14.4	0.58	99040
4.0	.9790289	0818	.1845612	3243	.0800700	9696	191 35 103.6	49.3	0.60	98402
4.5	.9771181	1733	.1922568	0201	.0834087	3085	192 5 79.0	24.7	0.60	97766
5.0	.9751353	1927	.1999379	7015	.0867413	6413	192 35 54.9	0.5	0.61	97131
5.5	.9730805	1402	.2076040	3678	.0900673	9675	193 4 91.2	36.8	0.61	96498
6.0	.9709541	0159	.2152546	0187	.0933867	2871	193 34 68.0	13.5	0.60	95865
6.5	.9687559	8200	.2228892	6536	.0966992	5999	194 3 105.3	50.8	0.58	95234
7.0	.9664862	5526	.2305074	2721	.1000044	9054	194 33 83.1	28.6	0.56	94605
7.5	.9641452	2139	.2381085	8735	.1033023	2035	195 3 61.4	6.9	0.53	93978
8.0	.9617329	8039	.2456920	4574	.1065927	4942	195 32 100.2	45.6	0.49	93352
8.5	.9592495	3227	.2532574	0231	.1098752	7770	196 2 79.5	24.9	0.45	92729
9.0	.9566951	7705	.2608040	5701	.1131497	0518	196 32 58.4	4.7	0.40	92107
9.5	.9540699	1476	.2683315	0980	.1164158	3182	197 1 99.8	45.1	0.35	91467
10.0	.9513740	4539	.2758392	6061	.1196734	5761	197 31 80.8	26.0	0.29	90868
10.5	.9486074	6896	.2833267	0949	.1229222	8252	198 1 62.3	7.5	0.23	90251
11.0	.9457702	8547	.2907933	5611	.1261630	0653	198 30 104.3	49.4	0.17	89637
11.5	.9428627	9494	.2982386	0068	.1293924	2060	199 0 86.9	31.9	0.11	89025
12.0	.9398850	9739	.3056619	4306	.1326134	5173	199 30 70.0	15.0	+0.05	88414
12.5	.9368373	9285	.3130627	8319	.1358246	7288	199 59 113.7	58.7	-0.01	87804
13.0	.9337198	8131	.3204405	2102	.1390258	9304	200 29 98.0	42.9	0.07	87196
13.5	.9305326	6282	.3277949	5651	.1422168	1217	200 59 82.9	27.8	0.13	86590
14.0	.9272760	3738	.3351252	8960	.1453974	3027	201 29 68.4	13.2	0.19	85985
14.5	.9239500	0500	.3424308	2021	.1485672	4729	201 58 114.4	59.2	0.25	85381
15.0	.9205547	6569	.3497112	4831	.1517261	6322	202 28 101.0	45.7	0.30	84778
15.5	.9170904	1948	.3569658	7383	.1548737	7802	202 58 88.2	32.9	0.35	84177
16.0	.9135572	6638	.3641940	9671	.1580099	9168	203 28 76.0	20.6	0.39	83576
16.5	.9099553	0641	.3713953	1690	.1611343	0416	203 58 64.3	8.9	0.43	82977
17.0	.9062850	3960	.3785690	3434	.1642468	1545	204 27 113.3	57.8	0.45	82378
17.5	.9025464	6596	.3857146	4897	.1673470	2551	204 57 102.8	47.3	0.47	81779
18.0	.8987398	8552	.3928315	6073	.1704347	3432	205 27 92.9	37.3	0.47	81181
18.5	.8948654	9830	.3999192	6957	.1735097	4186	205 57 83.5	27.9	0.47	80583
19.0	.8909236	9434	.4069770	7542	.1765717	4811	206 27 74.7	19.0	0.47	79985
19.5	.8869146	40366	.4140043	7822	.1796204	5303	206 57 66.4	10.7	0.46	79388
20.0	.8828385	9628	.4210006	7793	.1826557	5660	207 27 58.7	2.9	0.44	78791
20.5	.8786958	8222	.4279653	7447	.1856771	5879	207 56 111.5	55.7	0.42	78194
21.0	.8744865	6151	.4348978	6780	.1886846	5958	208 26 104.8	48.9	0.39	77597
21.5	.8702112	3419	.4417975	5785	.1916777	5894	208 56 98.6	42.7	0.36	77001
22.0	.8658700	0028	.4486638	4456	.1946564	5686	209 26 92.9	36.9	0.31	76405
22.5	.8614634	5984	.4554962	2783	.1976203	5330	209 56 87.7	31.7	0.26	75809
23.0	.8569916	1287	.4622241	0776	.2005693	4825	210 26 83.0	26.9	0.21	75213
23.5	.8524551	5944	.4690570	8414	.2035030	4167	210 56 78.8	22.6	0.15	74617
24.0	.8478541	9955	.4757842	5695	.2064213	3355	211 26 75.0	18.8	0.09	74021
24.5	.8431889	3324	.4824754	2616	.2093239	2386	211 56 71.7	15.5	-0.02	73426
25.0	.8384600	6056	.4891299	9170	.2122106	1258	212 26 68.9	12.6	+0.05	72832
25.5	.8336675	8153	.4957473	5353	.2150812	9969	212 56 66.5	10.2	0.12	72238
26.0	.8288120	9619	.5023269	1159	.2179353	8516	213 26 64.6	8.2	0.19	71645
26.5	.8238938	0458	.5088682	6581	.2207730	6898	213 56 63.1	6.6	0.25	71052
27.0	.8189134	0675	.5153707	1616	.2235937	5111	214 26 62.0	5.4	0.32	70460
27.5	.8138713	0275	.5218337	6256	.2263974	3153	214 56 61.3	4.7	0.38	69870
28.0	.8087677	9260	.5282569	0498	.2291837	1022	215 26 61.0	4.3	0.44	69281
28.5	.8036033	7637	.5346397	4336	.2319526	8717	215 56 61.1	4.4	0.50	68693
29.0	.7983783	5408	.5409817	7767	.2347038	6235	216 26 61.6	4.8	0.55	68107
29.5	.7930931	2577	.5472825	0786	.2374372	3575	216 56 62.5	5.7	0.60	67523
30.0	.7877480	9147	.5535417	3389	.2401526	0735	217 26 63.8	6.9	0.64	66942
30.5	.7823436	5123	.5597587	5570	.2428497	7713	217 56 65.5	8.6	0.67	66363
31.0	.7768800	0509	.5659372	7326	.2455284	4506	218 26 67.7	10.7	0.69	65786
31.5	.7713580	5308	.5720645	8651	.2481883	1111	218 56 70.2	13.1	0.71	65212
									+0.72	64641

◆ The first figures of this and the following logarithms are 9.99

Date. 1881.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.				
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\beta = \odot$'s Latitude.	Log. Rad. Vect. — ρ .	
Nov. 1.0	—7657775	9525	—5781523	9540	—2508294	7528	219° 26' 73.2	16.0	+0.72	8.98 54073	
1.5	.7601398	3166	.5841960	9988	.2534515	3756	219 56 76.5	19.3	0.72	63508	
2.0	.7544447	6235	.5901954	9994	.2560544	9792	220 26 80.2	22.9	0.71	62947	
2.5	.7486927	8736	.5961498	9550	.2586378	5633	220 56 84.3	27.0	0.69	62390	
3.0	.7428845	10673	.6020590	8654	.2612016	1278	221 26 88.8	31.4	0.67	61837	
3.5	.7370201	2049	.6079224	7300	.2637456	6725	221 56 93.7	36.3	0.64	61287	
4.0	.7311000	2868	.6137398	5487	.2662697	1973	222 26 99.1	41.6	0.60	60742	
4.5	.7251248	3135	.6195106	3208	.2687736	7019	222 56 104.9	47.4	0.55	60201	
5.0	.7190947	2854	.6252346	0461	.2712572	1862	223 26 111.1	53.5	0.49	59664	
5.5	.7130103	2030	.6309111	7239	.2737202	6499	223 57 57.7	0.0	0.44	59131	
6.0	.7068719	10665	.6365399	3540	.2761625	0929	224 27 64.8	7.0	0.38	58603	
6.5	.7006800	8765	.6421204	9358	.2785839	5150	224 57 72.3	14.5	0.32	58079	
7.0	.6944350	6334	.6476523	4691	.2809841	9159	225 27 80.2	22.3	0.26	57560	
7.5	.6881373	3376	.6531352	1533	.2833631	2957	225 57 88.6	30.6	0.20	57046	
8.0	.6817874	9896	.6585686	3881	.2857207	6541	226 27 97.4	39.4	0.13	56536	
8.5	.6753856	5897	.6639522	7731	.2880567	9908	226 57 106.7	48.7	0.07	56031	
9.0	.6689323	1383	.6692855	1078	.2903709	3057	227 27 116.5	58.4	+0.01	55530	
9.5	.6624282	6360	.6745682	3919	.2926631	5987	227 58 66.7	8.5	—0.05	55034	
10.0	.6558735	10832	.6797998	6249	.2949332	8696	228 28 77.4	19.1	0.11	54542	
10.5	.6492688	4804	.6849799	8065	.2971808	1180	228 58 88.6	30.2	0.16	54055	
11.0	.6426143	8277	.6901080	9361	.2994059	3439	229 28 100.2	41.7	0.21	53572	
11.5	.6359106	1258	.6951836	0132	.3016182	5570	229 58 112.3	53.8	0.25	53093	
12.0	.6291581	3751	.7002065	0376	.3037875	7271	230 29 64.9	6.3	0.29	52618	
12.5	.6223572	5760	.7051763	0089	.3059437	8841	230 59 78.0	19.3	0.32	52147	
13.0	.6155086	7291	.7100924	9266	.3080766	0178	231 29 91.5	32.7	0.35	51680	
13.5	.6086124	8348	.7149545	7902	.3101860	1280	231 59 105.5	46.6	0.36	51216	
14.0	.6016695	8937	.7197622	5995	.3122718	2146	232 30 60.0	1.0	0.37	50756	
14.5	.5946800	9060	.7245149	3538	.3143337	2773	233 0 75.0	16.0	0.37	50300	
15.0	.5876447	8724	.7292124	0529	.3163715	3159	233 30 90.4	31.3	0.36	49847	
15.5	.5805639	7934	.7338540	6961	.3183851	3304	234 0 106.3	47.1	0.35	49396	
16.0	.5734383	6695	.7384393	2831	.3203743	3205	234 31 62.6	3.4	0.33	48948	
16.5	.5662683	5012	.7429681	8135	.3223390	2860	235 1 79.4	20.2	0.30	48504	
17.0	.5590545	2891	.7474399	2870	.3242789	2267	235 31 96.6	37.3	0.26	48063	
17.5	.5517974	10337	.7518545	7033	.3261939	1427	236 1 114.2	54.9	0.22	47625	
18.0	.5444076	7356	.7562113	0618	.3280837	0333	236 32 72.3	12.9	0.17	47189	
18.5	.5371557	3954	.7605100	3622	.3299483	8088	237 2 90.8	31.3	0.11	46756	
19.0	.5297722	10135	.7647501	6040	.3317875	7389	237 32 109.7	50.1	—0.05	46326	
19.5	.5223477	5906	.7689314	7870	.3336012	5534	238 3 68.9	9.2	+0.01	45896	
20.0	.5148828	1273	.7730534	9108	.3353890	3422	238 33 88.5	28.7	0.07	45473	
20.5	.5073780	6242	.7771157	9749	.3371510	1051	239 3 108.5	48.7	0.13	45050	
21.0	.4998340	10817	.7811181	9791	.3388870	8420	239 34 68.9	0.0	0.20	44630	
21.5	.4922513	5006	.7850600	9228	.3405968	5527	240 4 89.6	20.6	0.27	44213	
22.0	.4846305	8813	.7889411	8057	.3422802	2371	240 34 110.7	50.6	0.34	43798	
22.5	.4769724	2247	.7927612	6276	.3439372	8950	241 5 72.1	12.0	0.41	43386	
23.0	.4692775	5313	.7965198	3881	.3455674	5263	241 35 93.9	33.7	0.47	42977	
23.5	.4615466	8019	.8002168	0869	.3471711	1308	242 5 115.9	55.6	0.53	42571	
24.0	.4537802	10370	.8038517	7237	.3487477	7084	242 36 78.2	17.8	0.58	42168	
24.5	.4459790	22373	.8074244	2983	.3502975	2591	243 6 100.8	40.3	0.64	41768	
25.0	.4381435	4033	.8109346	8104	.3518201	7827	243 37 63.6	3.0	0.69	41372	
25.5	.4302745	5357	.8143820	2597	.3533155	2791	244 7 86.7	26.0	0.73	40979	
26.0	.4223725	6351	.8177663	6460	.3547835	7481	244 37 110.1	49.3	0.77	40590	
26.5	.4144382	7022	.8210873	9689	.3562240	1895	245 8 73.7	12.9	0.80	40205	
27.0	.4064722	7376	.8243446	2282	.3576370	6035	245 38 97.6	36.7	0.82	39823	
27.5	.3984752	7420	.8275382	4238	.3590223	9898	246 9 61.7	0.8	0.83	39445	
28.0	.3904478	7160	.8306677	5553	.3603799	3484	246 39 86.0	25.0	0.84	39072	
28.5	.3823908	6603	.8337329	6225	.3617007	6792	247 9 110.5	49.4	0.84	38704	
29.0	.3743046	5754	.8367337	6253	.3630116	9821	247 40 75.3	14.1	0.83	38341	
29.5	.3661900	4621	.8396697	5634	.3642854	2570	248 10 100.3	39.0	0.81	37982	
30.0	.3580475	3209	.8425409	4367	.3655312	5037	248 41 65.5	4.1	0.79	37629	
30.5	—3498777	1524	—8453470	2449	—3667487	7222	249 11 90.9	29.4	+0.76	37281	

NOTE.—The accented letters correspond to the mean equinox and equator of January 0.0.

SUN'S COÖRDINATES, 1881. 401

Date. 1881.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\beta = \odot$'s Latitude.	Log. Rad. Vect. — ρ .
Dec. 1.0	—3416813	9572	—8480878	19877	—3679379	9124	249 41' 116.5	54.9	+0.79	0.99
1.5	3334589	7361	8507631	6651	3690988	0743	250 12 82.3	20.7	0.68	36939
2.0	3252112	4896	8533728	2769	3702312	2077	250 42 108.4	46.7	0.63	36603
2.5	3169387	2183	8559167	8229	3713351	3126	251 13 74.7	13.0	0.57	36272
3.0	3086421	9229	8583947	3031	3724106	3891	251 43 101.2	39.4	0.51	35947
3.5	3003219	6039	8608067	7172	3734572	4369	252 14 67.9	6.0	0.45	35629
4.0	2919787	2618	8631524	0651	3744753	4559	252 44 94.8	32.8	0.39	35317
4.5	2836132	8974	8654316	3644	3754643	4459	253 15 62.0	0.0	0.33	35011
5.0	2752258	5111	8676441	5611	3764245	4071	253 45 89.4	27.2	0.27	34711
5.5	2668173	1037	8697895	7087	3773556	3393	254 15 117.0	54.7	0.21	34418
6.0	2583882	6757	8718679	7893	3782577	2424	254 46 84.9	22.5	0.14	34131
6.5	2499392	2278	8738792	8028	3791306	1163	255 16 113.0	50.7	0.08	33851
7.0	2414708	7604	8758232	7490	3799743	9610	255 47 81.3	18.9	+0.01	33577
7.5	2329836	2742	8776998	6278	3807887	7765	256 17 109.9	47.4	—0.05	33310
8.0	2244782	7698	8795088	4391	3815738	5627	256 48 78.8	16.2	0.10	33049
8.5	2159554	2480	8812500	1825	3823294	3193	257 18 107.9	45.2	0.14	32795
9.0	2074158	7093	8829233	8581	3830555	0465	257 49 77.3	14.5	0.18	32547
9.5	1988599	1544	8845225	4656	3837521	7442	258 19 106.9	44.0	0.21	32306
10.0	1902884	5838	8860655	0049	3844190	4122	258 50 76.8	13.8	0.24	32071
10.5	1817018	9981	8875341	4758	3850562	0504	259 20 107.0	43.9	0.26	31842
11.0	1731007	3978	8889341	8782	3856636	6589	259 51 77.4	14.2	0.27	31619
11.5	1644859	7939	8902653	2117	3862411	2375	260 21 108.1	44.8	0.27	31403
12.0	1558579	1567	8915276	4764	3867887	7862	260 52 79.0	15.7	0.27	31193
12.5	1472175	5171	8927209	6720	3873063	3048	261 22 110.2	46.8	0.25	30988
13.0	1385653	8657	8938450	7965	3877938	7934	261 53 81.6	18.1	0.23	30789
13.5	1299020	2032	8948998	8557	3882512	2519	262 23 113.3	49.7	0.20	30595
14.0	1212281	5300	8958850	8433	3886784	6802	262 54 85.2	21.5	0.17	30406
14.5	1125444	8470	8968005	7612	3890753	0782	263 24 117.3	53.5	0.13	30222
15.0	1038516	1549	8976463	6094	3894421	4461	263 55 89.7	25.8	0.08	30043
15.5	0951502	4542	8984233	3878	3897785	7836	264 25 122.3	58.3	—0.03	29869
16.0	0864411	7457	8991284	0964	3900845	0907	264 56 95.2	31.1	+0.02	29699
16.5	0777249	40301	8997644	7348	3903601	3674	265 27 68.2	4.1	0.08	29534
17.0	0690023	3081	9003303	3032	3906053	6137	265 57 101.5	37.4	0.15	29373
17.5	0602740	5804	9008261	8014	3908200	8295	266 28 74.9	10.8	0.21	29217
18.0	0515409	8479	9012516	2294	3910043	0149	266 58 108.5	44.3	0.28	29065
18.5	0428036	11111	9016068	5871	3911580	1697	267 29 82.3	18.0	0.34	28918
19.0	0340628	3708	9018916	8744	3912812	2940	267 59 116.2	51.8	0.41	28775
19.5	0253193	6278	9021060	0913	3913738	3877	268 30 90.2	25.7	0.48	28636
20.0	0165738	8928	9022499	2377	3914358	4508	269 0 124.4	59.8	0.55	28501
20.5	—0078270	1365	9023232	3135	3914672	4833	269 31 98.7	33.9	0.62	28370
21.0	+0009203	6104	9023259	3187	3914680	4852	270 2 73.0	8.1	0.68	28243
21.5	0096674	3571	9022581	2534	3914383	4566	270 32 107.4	42.4	0.74	28120
22.0	0184136	1029	9021198	1177	3913780	3975	271 3 81.9	16.8	0.79	28001
22.5	0271583	8473	9019110	9114	3912872	3078	271 33 116.5	51.3	0.83	27886
23.0	0359009	5896	9016317	6347	3911658	1875	272 4 91.1	25.8	0.87	27776
23.5	0446406	3290	9012820	2875	3910140	0368	272 35 65.8	0.4	0.90	27670
24.0	0533765	0646	9008619	8700	3908315	8555	273 5 100.6	35.1	0.92	27568
24.5	0621081	7959	9003715	3821	3906187	6438	273 36 75.4	9.8	0.94	27471
25.0	0708345	5221	8998108	8240	3903753	4016	274 6 110.3	44.6	0.95	27378
25.5	0795549	2423	8991799	1957	3901017	1290	274 37 85.1	19.3	0.95	27289
26.0	0882687	9559	8984788	4972	3897975	8260	275 7 119.8	53.9	0.94	27205
26.5	0969752	6623	8977075	7285	3894630	4926	275 38 94.5	28.5	0.92	27126
27.0	1056736	3606	8968663	8899	3890981	1288	276 9 69.2	3.2	0.90	27052
27.5	1143634	0503	8959553	9815	3887030	7348	276 39 103.9	37.8	0.87	26983
28.0	1230439	7307	8949747	10035	3882777	3107	277 10 78.5	12.4	0.83	26919
28.5	1317145	4012	8939246	9560	3878223	8564	277 40 113.1	46.9	0.79	26861
29.0	1403745	0612	8928051	8391	3873368	3720	278 11 87.7	21.4	0.74	26810
29.5	1490233	7100	8916163	6529	3868213	8576	278 41 122.2	55.8	0.69	26765
30.0	1576602	3469	8903584	3976	3862759	3134	279 12 96.7	30.2	0.63	26726
30.5	1662844	9712	8890315	0733	3857005	7391	279 43 71.1	4.5	0.57	26693
31.0	1748954	5823	8876356	6900	3850952	1349	280 13 105.5	38.8	0.51	26666
31.5	1834924	1794	8861708	2178	3844600	5008	280 44 79.8	13.1	0.45	26642
32.0	+1920749	7620	—8846371	6868	—3837950	8370	281 14 114.1	47.3	+0.38	26632

NOTE. — : denotes a change in the preceding figure.

402 HELIOCENTRIC COORDINATES.

MERCURY.									
1881.	Julian Day.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x}{r^2}$.	$-\frac{y}{r^2}$.	$-\frac{z}{r^2}$.
Jan. — 1	240								
	8080	-0.2960	-0.3461	-0.0028	9.6580	229 42.0	+ 3.06	+ 3.58	+ 0.08
	4 8085	0.2072	0.4155	0.0166	9.6667	243 52.3	2.02	4.04	0.16
	9 8090	-0.1032	0.4541	0.0292	9.6689	257 41.5	+ 0.99	4.35	0.25
	14 8095	+0.0085	0.4509	0.0397	9.6646	271 34.6	- 0.08	4.54	0.39
	19 8100	0.1193	0.4312	0.0471	9.6538	285 57.3	1.27	4.59	0.50
Feb.	24 8105	0.2205	0.2674	0.0508	9.6362	301 18.6	2.05	4.41	0.61
	29 8110	0.3012	0.2708	0.0498	9.6120	318 13.1	4.28	3.85	0.71
	3 8115	0.3494	0.1453	0.0435	9.5817	337 23.9	6.11	2.55	0.76
	8 8120	0.3512	-0.0015	0.0316	9.5477	359 40.3	7.77	+ 0.02	0.70
	13 8125	0.2947	+0.1422	-0.0144	9.5149	25 43.6	8.20	- 3.87	+ 0.40
Mar.	18 8130	0.1780	0.2551	+0.0056	9.4924	55 26.5	5.76	8.29	- 0.18
	23 8135	+0.0191	0.3068	0.0243	9.4803	86 59.5	- 0.64	10.16	0.80
	28 8140	-0.1448	0.2836	0.0374	9.5073	117 27.1	+ 4.24	8.30	1.08
	5 8145	0.2781	0.1986	0.0417	9.5383	144 34.3	6.56	4.70	0.99
	10 8150	0.3630	+0.0777	0.0391	9.5727	167 49.7	6.76	- 1.44	0.73
April	15 8155	0.3970	-0.0551	0.0309	9.6043	187 46.1	5.94	+ 0.82	0.46
	20 8160	0.3860	0.1820	0.0192	9.6303	205 13.2	4.83	2.28	0.24
	25 8165	0.3382	0.2918	+0.0056	9.6497	220 56.1	3.70	3.19	- 0.07
	30 8170	0.2623	0.3778	-0.0085	9.6623	235 31.7	2.64	3.78	+ 0.08
	4 8175	0.1664	0.4350	0.0219	9.6684	249 30.2	1.61	4.18	0.21
	9 8180	-0.0581	0.4606	0.0337	9.6680	263 17.9	+ 0.57	4.45	0.33
	14 8185	+0.0542	0.4524	0.0431	9.6610	277 19.8	- 0.55	4.58	0.44
	19 8190	0.1623	0.4095	0.0492	9.6475	292 2.6	1.80	4.55	0.55
	24 8195	0.2564	0.3322	0.0511	9.6272	307 57.1	3.28	4.25	0.65
	29 8200	0.3254	0.2230	0.0480	9.6004	325 41.3	5.01	3.44	0.74
May	4 8205	0.3565	-0.0881	0.0394	9.5682	346 1.4	6.85	+ 1.69	0.76
	9 8210	0.3357	+0.0587	0.0251	9.5338	9 46.6	8.19	- 1.44	0.61
	14 8215	0.2541	0.1937	-0.0063	9.5039	37 24.5	7.61	5.80	+ 0.19
	19 8220	+0.1167	0.2848	+0.0136	9.4885	68 11.6	- 3.89	9.50	- 0.46
	24 8225	-0.0491	0.3062	0.0303	9.4944	99 39.6	+ 1.57	9.80	0.97
June	29 8230	0.2041	0.2551	0.0399	9.5189	128 56.1	5.01	6.90	1.08
	3 8235	0.3190	0.1522	0.0415	9.5523	154 28.0	6.84	3.26	0.89
	8 8240	0.3827	+0.0241	0.0363	9.5861	176 16.8	6.50	- 0.41	0.61
	13 8245	0.3976	-0.1080	0.0264	9.6156	195 6.6	5.51	+ 1.50	0.36
	18 8250	0.3705	0.2291	+0.0139	9.6389	211 46.4	4.37	2.71	- 0.17
July	23 8255	0.3102	0.3300	-0.0001	9.6556	226 58.0	3.26	3.46	0.00
	28 8260	0.2253	0.4046	0.0141	9.6656	241 15.2	2.22	3.96	+ 0.14
	3 8265	0.1235	0.4494	0.0270	9.6690	255 6.3	1.18	4.30	0.26
	8 8270	-0.0127	0.4614	0.0379	9.6660	268 56.7	+ 0.12	4.51	0.37
	13 8275	+0.0990	0.4392	0.0460	9.6563	283 11.8	- 1.03	4.60	0.48
Aug.	18 8280	0.2027	0.3822	0.0505	9.6400	298 19.6	2.37	4.47	0.59
	23 8285	0.2880	0.2916	0.0505	9.6171	314 53.6	3.95	4.00	0.69
	28 8290	0.3435	0.1707	0.0452	9.5879	333 35.2	5.76	2.87	0.76
	2 8295	0.3550	-0.0289	0.0343	9.5542	355 13.1	7.51	+ 0.61	0.72
	7 8300	0.3100	+0.1165	-0.0179	9.5206	20 32.2	8.27	- 3.12	+ 0.46
Sept.	12 8305	0.2040	0.2378	+0.0019	9.4953	49 37.8	6.48	7.56	- 0.06
	17 8310	+0.0506	0.3027	0.0211	9.4882	81 3.5	- 1.68	10.10	0.70
	22 8315	-0.1154	0.2934	0.0352	9.5026	111 56.7	+ 3.49	8.87	1.06
	27 8320	0.2565	0.2182	0.0414	9.5320	139 46.8	6.33	5.38	1.02
	1 8325	0.3512	+0.1020	0.0401	9.5664	163 44.3	6.83	- 1.98	0.78
	6 8330	0.3942	-0.0300	0.0327	9.5988	184 14.4	6.14	+ 0.47	0.51
	11 8335	-0.3911	-0.1592	+0.0216	9.6259	202 5.6	+ 5.05	+ 2.05	- 0.28

NOTE.—The Epoch is the 2,405,000th day of the Julian Period = 1872, July 25th.

MERCURY.

1881.	Julian Day.	x .	y .	z .	Log Radius Vector.	Longitude in Orb.	$-\frac{x^2}{r^2}$	$-\frac{y^2}{r^2}$	$-\frac{z^2}{r^2}$
240									
Sept. 16	8340	-0.3496	-0.2728	+0.0083	9.6465	218° 5.2	+ 3.90	+ 3.05	- 0.09
21	8345	0.2783	0.3637	-0.0059	9.6605	232 50.9	2.82	3.69	+ 0.06
26	8350	0.1855	0.4266	0.0195	9.6678	246 54.4	1.80	4.12	0.18
Oct. 1	8355	-0.0791	0.4582	0.0317	9.6686	260 42.2	+ 0.76	4.40	0.30
6	8360	+0.0332	0.4566	0.0416	9.6628	274 39.5	- 0.33	4.57	0.41
11	8365	0.1427	0.4204	0.0483	9.6505	289 2.4	1.56	4.57	0.53
16	8370	0.2401	0.3493	0.0510	9.6315	304 50.7	2.98	4.33	0.63
21	8375	0.3150	0.2458	0.0490	9.6059	322 11.0	4.66	3.64	0.73
26	8380	0.3542	-0.1148	0.0415	9.5746	341 58.1	6.51	+ 2.12	0.76
31	8385	0.3440	+0.0311	0.0282	9.5402	5 1.5	8.03	- 0.73	0.65
Nov. 5	8390	0.2740	0.1706	-0.0101	9.5087	31 56.1	7.94	4.94	+ 0.29
10	8395	+0.1458	0.2726	+0.0100	9.4898	62 15.4	- 4.81	9.00	- 0.33
15	8400	-0.0177	0.3080	0.0277	9.4616	93 50.4	+ 0.57	10.05	0.90
20	8405	0.1774	0.2696	0.0367	9.5133	123 42.2	4.98	7.57	1.09
25	8410	0.3011	0.1742	0.0417	9.5458	149 58.3	6.78	3.91	0.94
30	8415	0.3747	+0.0489	0.0377	9.5800	172 26.2	6.63	- 0.87	0.67
Dec. 5	8420	0.3981	-0.0836	0.0286	9.6105	191 45.8	5.71	+ 1.20	0.41
10	8425	0.3784	0.2077	0.0164	9.6351	208 46.5	4.58	2.52	0.20
15	8430	0.3237	0.3130	+0.0026	9.6530	224 11.8	3.46	3.34	- 0.02
20	8435	0.2428	0.3928	-0.0114	9.6642	238 37.0	2.41	3.88	+ 0.11
25	8440	0.1434	0.4433	0.0246	9.6689	252 31.0	1.38	4.25	0.24
30	8445	-0.0337	0.4617	0.0360	9.6670	266 19.6	+ 0.33	4.49	0.35
35	8450	+0.0784	-0.4460	-0.0447	9.6586	280 28.1	- 0.81	+ 4.59	+ 0.46

VENUS.

1881.	Julian Day.	x .	y .	z .	Log Radius Vector.	Longitude in Orb.	$-\frac{x^2}{r^2}$	$-\frac{y^2}{r^2}$	$-\frac{z^2}{r^2}$
240									
Jan. — 1	8080	+0.6652	+0.2857	-0.0340	9.8602	23° 11.6	- 21.22	- 9.12	+ 1.08
4	8085	0.6186	0.3751	0.0300	9.8598	31 10.9	19.78	12.00	0.96
9	8090	0.5600	0.4572	0.0254	9.8594	39 11.0	17.96	14.67	0.81
14	8095	0.4905	0.5304	0.0203	9.8589	47 12.1	15.78	17.06	0.65
19	8100	0.4112	0.5932	0.0148	9.8585	55 14.0	13.26	19.14	0.48
24	8105	0.3240	0.6444	0.0090	9.8581	63 16.9	10.48	20.84	0.29
29	8110	0.2305	0.6829	-0.0031	9.8578	71 20.6	7.48	22.15	+ 0.10
Feb. 3	8115	0.1323	0.7079	+0.0029	9.8574	79 25.1	4.30	23.01	- 0.09
8	8120	+0.0316	0.7189	0.0088	9.8571	87 30.3	- 1.03	23.42	0.29
13	8125	-0.0698	0.7157	0.0146	9.8569	95 36.1	+ 2.28	23.35	0.48
18	8130	0.1698	0.6983	0.0201	9.8567	103 42.4	5.55	22.82	0.66
23	8135	0.2664	0.6670	0.0252	9.8565	111 49.2	8.71	21.82	0.82
28	8140	0.3577	0.6224	0.0298	9.8564	119 56.2	11.70	20.37	0.97
Mar. 5	8145	0.4419	0.5654	0.0338	9.8564	128 3.4	14.47	18.52	1.10
10	8150	0.5172	0.4971	0.0371	9.8564	136 10.7	16.93	16.27	1.21
15	8155	0.5824	0.4190	0.0396	9.8565	144 17.8	19.05	13.71	1.30
20	8160	0.6359	0.3325	0.0414	9.8566	152 24.7	20.79	10.87	1.35
25	8165	0.6767	0.2395	0.0424	9.8568	160 31.2	22.10	7.82	1.38
30	8170	0.7041	0.1416	0.0425	9.8570	168 37.3	22.95	4.61	1.39
April 4	8175	0.7176	+0.0410	0.0418	9.8573	176 72.8	23.34	- 1.33	1.36
9	8180	0.7168	-0.0605	0.0402	9.8576	184 47.6	23.27	+ 1.96	1.31
14	8185	0.7019	0.1608	0.0379	9.8580	192 51.7	22.73	5.21	1.23
19	8190	-0.6732	-0.2579	+0.0344	9.8584	200 55.0	+ 21.74	+ 8.33	- 1.12

NOTE.—The Epoch is the 2,405,000th day of the Julian Period = 1878, July 25th.

VENUS.										
1881.	Julian Day.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^2}$	$-\frac{y^2}{r^2}$	$-\frac{z^2}{r^2}$	
April	24	8195	-0.6312	-0.3500	+0.0310	9.8588	208° 57.4	+20.32	+11.27	-1.00
	29	8200	0.5768	0.4351	0.0267	9.8592	216 58.8	18.53	13.98	0.86
May	4	8205	0.5112	0.5118	0.0218	9.8596	224 59.3	16.37	16.39	0.70
	9	8210	0.4357	0.5786	0.0164	9.8600	232 59.0	13.91	18.47	0.52
	14	8215	0.3517	0.6340	0.0107	9.8604	240 57.7	11.19	20.19	0.34
	19	8220	0.2608	0.6772	+0.0049	9.8608	248 55.6	8.28	21.52	-0.16
	24	8225	0.1644	0.7073	-0.0010	9.8611	256 52.7	5.22	22.42	+0.03
	29	8230	-0.0658	0.7238	0.0069	9.8614	264 49.1	+2.08	22.89	0.22
June	3	8235	+0.0345	0.7263	0.0127	9.8617	272 44.8	-1.09	22.93	0.40
	8	8240	0.1342	0.7149	0.0183	9.8619	280 40.0	4.23	22.53	0.58
	13	8245	0.2313	0.6898	0.0235	9.8621	288 34.7	7.28	21.72	0.74
	18	8250	0.3239	0.6515	0.0283	9.8622	296 29.1	10.19	20.49	0.89
	23	8255	0.4104	0.6007	0.0325	9.8623	304 23.3	12.90	18.88	1.02
	28	8260	0.4890	0.5384	0.0361	9.8623	312 17.4	15.37	16.92	1.13
July	3	8265	0.5583	0.4659	0.0390	9.8622	320 11.6	17.55	14.65	1.22
	8	8270	0.6169	0.3844	0.0411	9.8621	328 5.9	19.41	12.10	1.29
	13	8275	0.6637	0.2956	0.0425	9.8620	336 0.5	20.90	9.31	1.34
	18	8280	0.6978	0.2011	0.0430	9.8618	343 55.5	22.01	6.34	1.36
	23	8285	0.7184	0.1028	0.0428	9.8615	351 51.0	22.70	3.24	1.35
	28	8290	0.7253	-0.0024	0.0417	9.8612	359 47.1	22.96	+0.08	1.32
Aug.	2	8295	0.7182	+0.0980	0.0398	9.8609	7 43.9	22.79	-3.11	1.26
	7	8300	0.6972	0.1964	0.0371	9.8605	15 41.4	22.18	6.25	1.18
	12	8305	0.6628	0.2912	0.0337	9.8602	23 39.8	21.13	9.29	1.08
	17	8310	0.6154	0.3802	0.0297	9.8597	31 39.1	19.69	12.14	0.95
	22	8315	0.5562	0.4618	0.0251	9.8593	39 39.3	17.84	14.82	0.80
	27	8320	0.4860	0.5344	0.0200	9.8589	47 40.4	15.63	17.20	0.64
Sept.	1	8325	0.4063	0.5966	0.0145	9.8585	55 42.5	13.11	19.25	0.47
	6	8330	0.3187	0.6470	0.0087	9.8581	63 45.5	10.31	20.93	0.28
	11	8335	0.2248	0.6847	-0.0027	9.8577	71 49.2	7.29	22.21	+0.09
	16	8340	0.1265	0.7089	+0.0033	9.8574	79 53.7	4.11	23.05	-0.11
	21	8345	+0.0256	0.7191	0.0092	9.8571	87 59.0	-0.83	23.43	0.30
Oct.	26	8350	-0.0758	0.7150	0.0150	9.8568	96 4.9	+2.47	23.33	0.49
	1	8355	0.1756	0.6968	0.0204	9.8566	104 11.3	5.74	22.77	0.67
	6	8360	0.2720	0.6647	0.0255	9.8565	112 18.1	8.90	21.75	0.83
	11	8365	0.3629	0.6193	0.0300	9.8564	120 25.2	11.88	20.28	0.98
	16	8370	0.4467	0.5616	0.0340	9.8564	128 32.4	14.62	18.40	1.11
	21	8375	0.5214	0.4928	0.0372	9.8564	136 39.7	17.07	16.13	1.22
	26	8380	0.5859	0.4141	0.0398	9.8565	144 46.9	19.18	13.55	1.30
	31	8385	0.6386	0.3271	0.0415	9.8566	152 53.8	20.88	10.70	1.36
Nov.	5	8390	0.6787	0.2337	0.0424	9.8568	161 0.3	22.16	7.64	1.39
	10	8395	0.7053	0.1356	0.0425	9.8570	169 6.4	22.99	4.42	1.39
	15	8400	0.7179	+0.0349	0.0417	9.8573	177 11.9	23.35	-1.13	1.36
	20	8405	0.7163	-0.0666	0.0401	9.8576	185 16.7	23.25	+2.16	1.30
	25	8410	0.7005	0.1667	0.0377	9.8580	193 20.8	22.68	5.39	1.22
	30	8415	0.6710	0.2636	0.0346	9.8584	201 24.0	21.67	8.51	1.12
Dec.	5	8420	0.6282	0.3553	0.0308	9.8588	209 26.3	20.23	11.44	0.99
	10	8425	0.5732	0.4400	0.0264	9.8592	217 27.7	18.41	14.13	0.85
	15	8430	0.5070	0.5161	0.0214	9.8596	225 28.2	16.24	16.53	0.69
	20	8435	0.4308	0.5822	0.0160	9.8600	233 27.8	13.76	18.60	0.51
	25	8440	0.3463	0.6370	0.0104	9.8604	241 26.5	11.03	20.29	0.33
	30	8445	0.2552	0.6794	+0.0046	9.8608	249 24.3	8.11	21.58	-0.15
	35	8450	-0.1590	-0.7087	-0.0014	9.8611	257 21.4	+5.04	+22.46	+0.04

NOTE.—The Epoch is the 2,405,000th day of the Julian Period = 1872, July 25th.

THE EARTH.

1881.	Julian Day.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^2}$.	$-\frac{y^2}{r^2}$.	$-\frac{z^2}{r^2}$.
Jan. — 1	²⁴⁰ 8080	-0.1597	+0.9704	0.0000	9.9927	99° 20.8	+ 2.24	-13.61	0.00
9	8090	0.3289	0.9266		9.9927	109 32.3	4.61	13.01	
19	8100	0.4679	0.8545		9.9930	119 43.2	6.83	11.97	
29	8110	0.6318	0.7562		9.9936	129 53.1	8.82	10.55	
Feb. 8	8120	0.7563	0.6342		9.9943	140 1.3	10.50	8.80	
18	8130	0.8576	0.4927		9.9952	150 7.2	11.83	6.80	
28	8140	0.9326	0.3362		9.9962	160 10.4	12.77	4.61	
Mar. 10	8150	0.9793	+0.1695		9.9973	170 10.6	13.31	- 2.30	
20	8160	0.9966	-0.0022		9.9985	180 7.5	13.43	+ 0.03	
30	8170	0.9843	0.1739		9.9998	190 1.2	13.15	2.33	
April 9	8180	0.9428	0.3405		0.0010	199 51.4	12.49	4.51	
19	8190	0.8736	0.4971		0.0022	209 38.2	11.48	6.53	
29	8200	0.7791	0.6393		0.0034	219 21.9	10.16	8.33	
May 9	8210	0.6622	0.7630		0.0044	229 2.7	8.57	9.87	
19	8220	0.5263	0.8648		0.0053	238 40.8	6.77	11.12	
29	8230	0.3752	0.9422		0.0061	248 16.9	4.80	12.05	
June 8	8240	0.2137	0.9929		0.0066	257 51.1	2.72	12.65	
18	8250	-0.0461	1.0154		0.0070	267 23.9	+ 0.58	12.91	
28	8260	+0.1228	1.0093		0.0072	276 56.2	- 1.56	12.81	
July 8	8270	0.2883	0.9750		0.0072	286 28.3	3.66	12.38	
18	8280	0.4457	0.9133		0.0070	296 0.6	5.67	11.61	
28	8290	0.5903	0.8259		0.0065	305 33.8	7.53	10.54	
Aug. 7	8300	0.7184	0.7150		0.0059	315 8.3	9.20	9.16	
17	8310	0.8263	0.5841		0.0051	324 44.6	10.64	7.53	
27	8320	0.9106	0.4365		0.0042	334 23.3	11.80	5.66	
Sept. 6	8330	0.9687	0.2763		0.0031	344 4.6	12.64	3.61	
16	8340	0.9988	-0.1083		0.0020	353 48.8	13.14	+ 1.42	
26	8350	0.9999	+0.0630		0.0008	3 36.3	13.27	- 0.84	
Oct. 6	8360	0.9716	0.2324		9.9995	13 27.1	13.01	3.11	
16	8370	0.9145	0.3949		9.9983	23 21.4	12.35	5.33	
26	8380	0.8301	0.5456		9.9971	33 19.1	11.30	7.43	
Nov. 5	8390	0.7208	0.6800		9.9960	43 19.8	9.89	9.33	
15	8400	0.5895	0.7936		9.9950	53 23.5	8.15	10.96	
25	8410	0.4401	0.8829		9.9941	63 30.0	6.12	12.27	
Dec. 5	8420	0.2774	0.9450		9.9934	73 38.4	3.87	13.20	
15	8430	+0.1062	0.9781		9.9930	83 48.4	- 1.48	13.70	
25	8440	-0.0685	0.9809		9.9927	93 59.6	+ 0.96	13.76	
35	8450	-0.2410	+0.9535	0.0000	9.9927	104 11.1	+ 3.35	-13.38	0.00

MARS.

1881.	Julian Day.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^2}$.	$-\frac{y^2}{r^2}$.	$-\frac{z^2}{r^2}$.
Jan. — 1	²⁴⁰ 8080	-0.6109	-1.3751	-0.0147	0.17748	246° 3' 26"	+ 0.32	+ 0.71	+ 0.01
9	8090	0.4747	1.4142	0.0188	0.17372	251 27 11	0.25	0.75	0.01
19	8100	0.3344	1.4405	0.0228	0.16997	256 56 35	0.18	0.79	0.01
29	8110	0.1910	1.4537	0.0265	0.16628	262 31 41	0.11	0.81	0.01
Feb. 8	8120	-0.0458	1.4533	0.0300	0.16268	268 12 28	+ 0.03	0.83	0.02
18	8130	+0.0998	1.4389	0.0332	0.15920	273 58 51	- 0.06	0.84	0.02
28	8140	0.2444	1.4103	0.0361	0.15590	279 50 41	0.15	0.84	0.02
Mar. 10	8150	0.3865	1.3675	0.0386	0.15281	285 47 44	0.24	0.84	0.02
20	8160	0.5247	1.3108	0.0408	0.15000	291 49 40	0.33	0.82	0.03
30	8170	+0.6575	-1.2404	-0.0425	0.14748	297 56 6	- 0.42	+ 0.79	+ 0.03

NOTE.—The Epoch is the 2,405,000th day of the Julian Period = 1872, July 25th.

MARS.									
1881.	Julian Day.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}$	$-\frac{y^2}{r^3}$	$-\frac{z^2}{r^3}$
April	240								
	9 8180	+0.7831	-1.1564	-0.0437	0.14529	304° 6' 31"	- 0.50	+ 0.75	+ 0.03
	19 8190	0.9002	1.0601	0.0445	0.14347	310 20 24	0.59	0.69	0.03
May	29 8200	1.0075	0.9522	0.0448	0.14206	316 37 4	0.67	0.63	0.03
	9 8210	1.1036	0.8337	0.0446	0.14107	322 55 49	0.74	0.56	0.03
	19 8220	1.1874	0.7050	0.0439	0.14052	329 15 55	0.79	0.47	0.03
June	29 8230	1.2578	0.5701	0.0427	0.14042	335 36 36	0.84	0.38	0.03
	8 8240	1.3140	0.4280	0.0410	0.14078	341 57 2	0.88	0.28	0.03
	18 8250	1.3556	0.2813	0.0389	0.14158	348 16 27	0.90	0.19	0.03
July	28 8260	1.3826	-0.1313	0.0363	0.14282	354 34 5	0.91	+ 0.09	0.02
	8 8270	1.3941	+0.0203	0.0333	0.14447	0 49 14	0.91	- 0.01	0.02
Aug.	18 8280	1.3903	0.1716	0.0300	0.14650	7 1 12	0.89	0.11	0.02
	28 8290	1.3715	0.3210	0.0263	0.14889	13 9 24	0.86	0.20	0.02
	7 8300	1.3384	0.4670	0.0224	0.15159	19 13 18	0.83	0.29	0.02
Sept.	17 8310	1.2914	0.6082	0.0183	0.15457	25 12 28	0.78	0.37	0.01
	27 8320	1.2311	0.7432	0.0139	0.15778	31 6 33	0.73	0.44	0.01
Oct.	6 8330	1.1586	0.8708	0.0094	0.16119	36 55 16	0.67	0.51	+ 0.01
	16 8340	1.0749	0.9900	0.0048	0.16475	42 38 26	0.61	0.56	0.00
	26 8350	0.9810	1.0998	-0.0002	0.16842	48 15 56	0.54	0.61	0.00
Nov.	6 8360	0.8780	1.1994	+0.0044	0.17215	53 47 43	0.47	0.65	- 0.01
	16 8370	0.7672	1.2882	0.0090	0.17592	59 13 49	0.40	0.67	0.01
Dec.	26 8380	0.6496	1.3657	0.0135	0.17968	64 34 20	0.33	0.70	0.01
	5 8390	0.5264	1.4316	0.0179	0.18341	69 49 20	0.26	0.71	0.01
	15 8400	0.3988	1.4856	0.0221	0.18706	74 59 2	0.19	0.72	0.01
Jan.	25 8410	0.2680	1.5275	0.0262	0.19063	80 3 37	0.13	0.72	0.01
	5 8420	0.1351	1.5573	0.0301	0.19408	85 3 19	- 0.06	0.72	0.01
	15 8430	+0.0011	1.5750	0.0337	0.19738	89 58 24	0.00	0.71	0.01
Feb.	25 8440	-0.1328	1.5807	0.0371	0.20053	94 49 6	+ 0.06	0.70	0.02
	35 8450	-0.2658	+1.5749	+0.0402	0.20350	99 35 45	+ 0.12	- 0.68	- 0.02
JUPITER.									
1881.	Julian Day.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}$	$-\frac{y^2}{r^3}$	$-\frac{z^2}{r^3}$
Jan. —	240								
	1 8080	+4.58564	+1.86427	-0.11037	0.69472	22° 7' 15"	-170.69	- 69.39	+ 4.11
	9 8090	4.55580	1.93764	0.10996	0.69478	23 2 14	169.51	72.09	4.09
	19 8100	4.52485	2.01053	0.10953	0.69484	23 57 12	168.29	74.78	4.07
Feb.	29 8110	4.49278	2.08292	0.10907	0.69490	24 52 9	167.03	77.44	4.05
	8 8120	4.45962	2.15480	0.10858	0.69497	25 47 5	165.72	80.07	4.03
	18 8130	4.42538	2.22616	0.10806	0.69504	26 42 0	164.36	82.68	4.01
	28 8140	4.39005	2.29696	0.10752	0.69512	27 36 54	162.96	85.26	3.99
Mar.	10 8150	4.35366	2.36721	0.10696	0.69520	28 31 46	161.52	87.83	3.97
	20 8160	4.31622	2.43687	0.10636	0.69529	29 26 37	160.03	90.35	3.95
	30 8170	4.27773	2.50595	0.10574	0.69538	30 21 26	158.50	92.85	3.92
	April 9 8180	4.23820	2.57443	0.10510	0.69548	31 16 14	156.94	95.33	3.90
May	19 8190	4.19764	2.64228	0.10443	0.69558	32 11 1	155.32	97.77	3.87
	29 8200	4.15608	2.70949	0.10373	0.69569	33 5 46	153.67	100.18	3.84
	9 8210	4.11350	2.77606	0.10301	0.69580	34 0 30	151.97	102.56	3.81
	19 8220	4.06993	2.84195	0.10227	0.69592	34 55 12	150.24	104.91	3.78
June	29 8230	+4.02536	+2.90716	-0.10150	0.69604	35 49 52	-148.47	-107.23	+ 3.75

NOTE.—The Epoch is the 2,405,000th day of the Julian Period = 1873, July 25th.

HELIOCENTRIC COÖRDINATES. 407

JUPITER.										
1881.	Julian Day.	<i>x</i> .	<i>y</i> .	<i>z</i> .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}$	$-\frac{y^2}{r^3}$	$-\frac{z^2}{r^3}$	
June	8	²⁴⁰ 8240	+3.97983	+2.97167	-0.10070	0.69617	36° 44' 31"	-146.66	-109.51	+ 3.72
	18	8250	3.93333	3.03546	0.09989	0.69630	37 39 7	144.81	111.76	3.69
	28	8260	3.88589	3.09853	0.09904	0.69644	38 33 42	142.93	113.97	3.65
July	8	8270	3.83750	3.16083	0.09818	0.69658	39 28 15	141.02	116.15	3.61
	18	8280	3.78819	3.22238	0.09729	0.69673	40 22 45	139.06	118.29	3.58
	28	8290	3.73797	3.28315	0.09637	0.69688	41 17 13	137.08	120.40	3.54
	Aug. 7	8300	3.68686	3.34312	0.09543	0.69704	42 11 38	135.06	122.46	3.50
	17	8310	3.63485	3.40230	0.09448	0.69720	43 6 1	133.01	124.49	3.46
	27	8320	3.58198	3.46066	0.09349	0.69736	44 0 22	130.92	126.49	3.42
	Sept. 6	8330	3.52825	3.51818	0.09249	0.69753	44 54 39	128.81	128.44	3.38
	16	8340	3.47368	3.57486	0.09146	0.69770	45 48 54	126.66	130.35	3.34
	26	8350	3.41828	3.63068	0.09041	0.69788	46 43 7	124.49	132.23	3.30
Oct.	6	8360	3.36206	3.68563	0.08934	0.69806	47 37 17	122.29	134.06	3.26
	16	8370	3.30504	3.73971	0.08825	0.69824	48 31 24	120.07	135.86	3.21
	26	8380	3.24724	3.79290	0.08714	0.69843	49 25 28	117.81	137.61	3.17
Nov.	5	8390	3.18867	3.84520	0.08601	0.69863	50 19 30	115.53	139.32	3.12
	15	8400	3.12933	3.89658	0.08485	0.69883	51 13 29	113.23	140.99	3.08
Dec.	25	8410	3.06925	3.94704	0.08368	0.69903	52 7 25	110.90	142.61	3.03
	5	8420	3.00844	3.99657	0.08248	0.69923	53 1 18	108.55	144.20	2.98
	15	8430	2.94691	4.04515	0.08127	0.69944	53 55 8	106.17	145.74	2.93
	25	8440	2.88468	4.09277	0.08004	0.69965	54 48 55	103.78	147.24	2.88
	35	8450	+2.82176	+4.13942	-0.07879	0.69987	55 42 39	-101.37	-148.70	+ 2.83

SATURN.										
1881.	Julian Day.	<i>x</i> .	<i>y</i> .	<i>z</i> .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}$	$-\frac{y^2}{r^3}$	$-\frac{z^2}{r^3}$	
Jan. —	1	²⁴⁰ 8080	+8.20593	+4.35467	-0.40150	0.96841	27° 56' 55"	-13.80	- 7.32	+ 0.67
	9	8090	8.17658	4.40384	0.40114	0.96829	28 18 4	13.76	7.41	0.67
	19	8100	8.14693	4.45285	0.40077	0.96816	28 39 13	13.72	7.50	0.67
	29	8110	8.11698	4.50169	0.40038	0.96803	29 0 24	13.69	7.59	0.67
Feb.	8	8120	8.08673	4.55036	0.39998	0.96791	29 21 35	13.65	7.68	0.67
	18	8130	8.05617	4.59886	0.39956	0.96778	29 42 47	13.61	7.77	0.67
	28	8140	8.02531	4.64719	0.39913	0.96766	30 4 0	13.57	7.86	0.67
Mar.	10	8150	7.99416	4.69535	0.39868	0.96753	30 25 13	13.53	7.94	0.67
	20	8160	7.96271	4.74333	0.39822	0.96741	30 46 27	13.48	8.03	0.67
April	30	8170	7.93096	4.79114	0.39774	0.96728	31 7 42	13.44	8.12	0.67
	9	8180	7.89891	4.83877	0.39724	0.96716	31 28 58	13.40	8.21	0.67
	19	8190	7.86657	4.88621	0.39673	0.96704	31 50 14	13.36	8.30	0.67
May	29	8200	7.83394	4.93347	0.39621	0.96691	32 11 31	13.31	8.38	0.67
	9	8210	7.80102	4.98055	0.39567	0.96679	32 32 49	13.27	8.47	0.67
	19	8220	7.76781	5.02744	0.39512	0.96667	32 54 7	13.22	8.56	0.67
June	29	8230	7.73430	5.07415	0.39455	0.96655	33 15 26	13.18	8.64	0.67
	8	8240	7.70050	5.12066	0.39397	0.96642	33 36 46	13.13	8.73	0.67
July	18	8250	7.66642	5.16698	0.39337	0.96630	33 58 6	13.08	8.82	0.67
	28	8260	7.63205	5.21311	0.39276	0.96618	34 19 28	13.03	8.90	0.67
	8	8270	7.59739	5.25904	0.39214	0.96606	34 40 50	12.99	8.99	0.67
	18	8280	7.56245	5.30477	0.39150	0.96594	35 2 12	12.94	9.08	0.67
	28	8290	+7.52722	+5.35030	-0.39085	0.96582	35 23 36	-12.89	- 9.16	+ 0.67

NOTE.—The Epoch is the 2,405,000th day of the Julian Period = 1872, July 25th.

408 HELIOCENTRIC COÖRDINATES.

SATURN.										
1881.	Julian Day.	<i>x</i> .	<i>y</i> .	<i>z</i> .	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3} x$.	$-\frac{\kappa^2}{r^3} y$.	$-\frac{\kappa^2}{r^3} z$.	
Aug.	7	²⁴⁰ 8300	+7.49171	+5.39563	-0.39018	0.96571	35° 45' 0"	-12.84	-9.25	+ 0.67
	17	8310	7.45591	5.44075	0.38949	0.96559	36 6 24	12.79	9.33	0.67
Sept.	27	8320	7.41983	5.48567	0.38879	0.96547	36 27 50	12.73	9.42	0.67
	6	8330	7.38347	5.53038	0.38808	0.96535	36 49 16	12.68	9.50	0.67
Oct.	16	8340	7.34683	5.57489	0.38735	0.96523	37 10 43	12.63	9.58	0.67
	26	8350	7.30992	5.61918	0.38660	0.96512	37 32 10	12.58	9.67	0.66
	6	8360	7.27273	5.66326	0.38584	0.96500	37 53 38	12.52	9.75	0.66
	16	8370	7.23526	5.70712	0.38506	0.96488	38 15 7	12.47	9.83	0.66
Nov.	26	8380	7.19751	5.75076	0.38427	0.96477	38 36 37	12.41	9.92	0.66
	5	8390	7.15949	5.79418	0.38347	0.96465	38 58 7	12.36	10.00	0.66
	15	8400	7.12120	5.83738	0.38265	0.96454	39 19 38	12.30	10.08	0.66
	25	8410	7.08263	5.88036	0.38182	0.96442	39 41 9	12.24	10.17	0.66
Dec.	5	8420	7.04379	5.92312	0.38098	0.96431	40 2 42	12.19	10.25	0.66
	15	8430	7.00469	5.96565	0.38012	0.96420	40 24 15	12.13	10.33	0.66
	25	8440	6.96532	6.00795	0.37924	0.96408	40 45 48	12.07	10.41	0.66
	35	8450	+6.92568	+6.05003	-0.37835	0.96397	41 7 23	-12.01	-10.49	+ 0.66
URANUS.										
1881.	Julian Day.	<i>x</i> .	<i>y</i> .	<i>z</i> .	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3} x$.	$-\frac{\kappa^2}{r^3} y$.	$-\frac{\kappa^2}{r^3} z$.	
Jan. —1	²⁴⁰ 8080	-17.26879	+6.00666	+0.24623	1.26210	160° 49' 15"	+ 0.54	- 0.19	- 0.01	
Feb. 8	8120	17.32140	5.85081	0.24630	1.26208	161 20 11	0.54	0.18	0.01	
Mar. 20	8160	17.37268	5.69450	0.24636	1.26207	161 51 6	0.54	0.18	0.01	
Apr. 29	8200	17.42260	5.53772	0.24639	1.26205	162 22 2	0.54	0.17	0.01	
June 8	8240	17.47117	5.38052	0.24642	1.26204	162 52 59	0.54	0.17	0.01	
July 18	8280	17.51841	5.22289	0.24643	1.26203	163 23 55	0.54	0.16	0.01	
Aug. 27	8320	17.56432	5.06485	0.24641	1.26202	163 54 52	0.55	0.16	0.01	
Oct. 6	8360	17.60890	4.90642	0.24637	1.26201	164 25 49	0.55	0.15	0.01	
Nov. 15	8400	17.65212	4.74757	0.24632	1.26200	164 56 47	0.55	0.15	0.01	
Dec. 25	8440	-17.69396	+4.58834	+0.24625	1.26200	165 27 44	+ 0.55	- 0.14	- 0.01	
NEPTUNE.										
1881.	Julian Day.	<i>x</i> .	<i>y</i> .	<i>z</i> .	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3} x$.	$-\frac{\kappa^2}{r^3} y$.	$-\frac{\kappa^2}{r^3} z$.	
Jan. —1	²⁴⁰ 8080	+21.7548	+20.3756	-0.9262	1.47452	43° 7' 25"	- 0.21	- 0.19	+ 0.01	
Feb. 8	8120	21.6679	20.4681	0.9260	1.47452	43 22 4	0.21	0.19	0.01	
Mar. 20	8160	21.5806	20.5603	0.9258	1.47452	43 36 42	0.21	0.19	0.01	
Apr. 29	8200	21.4928	20.6521	0.9256	1.47453	43 51 20	0.20	0.20	0.01	
June 8	8240	21.4046	20.7436	0.9254	1.47453	44 5 59	0.20	0.20	0.01	
July 18	8280	21.3161	20.8346	0.9251	1.47453	44 20 37	0.20	0.20	0.01	
Aug. 27	8320	21.2272	20.9252	0.9248	1.47453	44 35 16	0.20	0.20	0.01	
Oct. 6	8360	21.1379	21.0155	0.9245	1.47453	44 49 54	0.20	0.20	0.01	
Nov. 15	8400	21.0482	21.1054	0.9242	1.47453	45 4 32	0.20	0.20	0.01	
Dec. 25	8440	+20.9580	+21.1950	-0.9238	1.47453	45 19 11	- 0.20	-0.20	+ 0.01	

NOTE.—The Epoch is the 2,405,000th day of the Julian Period = 1872, July 25th.

INCLINATIONS AND NODES.

Planet.	Inclination.	Increase in 100 Days.		Longitude of Ascending Node.	Increase in 100 Days.	
	i	Δi	$\Delta' i$	Ω	$\Delta \Omega$	$\Delta' \Omega$
Mercury . .	$7^{\circ} 0' 9.8''$	$+0.01947''$	$-0.05777''$	$46^{\circ} 49' 3.1''$	$+11.644''$	$-1.271''$
Venus . . .	3 23 35.9	$+0.01514''$	$-0.00772''$	75 32 6.8	8.904	-2.705
Mars . . .	1 51 1.8	$-0.00586''$	$-0.07991''$	48 34 1.9	7.585	-2.905
Jupiter . .	1 18 35.4	$-0.06189''$	$-0.02747''$	99 7 15.4	9.397	+1.075
Saturn . . .	2 29 19.9	$-0.03825''$	$+0.02400''$	112 30 53.2	8.398	-2.760
Uranus . . .	0 46 21.1	$+0.00688''$	$-0.01613''$	73 21 7.0	5.080	+0.885
Neptune . .	1 46 54.7	$-0.09020''$	$+0.00364''$	130 22 29.7	+10.885	-0.031

NOTE.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

Δi and $\Delta \Omega$ refer to the moving ecliptic and equinox.

$\Delta' i$ and $\Delta' \Omega$ refer to the ecliptic and equinox of the epoch.

MASSES. SUN'S=1.

Planet.	Mass.	Log. of Mass.	Authority.
Mercury . .	$\frac{1}{4865751} = .000\ 000\ 206$	93.31285	ENCKE, <i>A. N.</i> , No. 443.
Venus . . .	$\frac{1}{390000} = .000\ 002\ 564$	94.40893	LE VERRIER, <i>Théor. de Merc.</i> , p. 115.
The Earth .	$\frac{1}{354936} = .000\ 002\ 817$	94.44985	LE VERRIER, <i>Théor. de Merc.</i> , p. 26.
Mars . . .	$\frac{1}{2680637} = .000\ 000\ 373$	93.57176	BURCKHARDT, <i>Conn. des Temps.</i> , 1816, p. 343.
Jupiter . .	$\frac{1}{1047.879 \pm .235} = .000\ 954\ 308$	96.979689	BESSEL, <i>Die Masse des Jupiter</i> , p. 64.
Saturn . . .	$\frac{1}{3501.6} = .000\ 285\ 584$	96.455733	BESSEL, <i>Astr. Nachr.</i> , XI, 17.
Uranus . . .	$\frac{1}{24905} = .000\ 040\ 153$	95.60371	LANONT, <i>Mem. Ast. Soc.</i> , Vol. XI. p. 54.
Neptune . .	$\frac{1}{18780} = .000\ 053\ 248$	95.72630	PEIRCE, <i>Am. Ac. Proc.</i> , Vol. I. p. 333.
Uranus . . .	$\frac{1}{22600 \pm 100}$	. . . . .	NEWCOMB, <i>Uranian and Neptunian Systems</i> , p. 36.
Neptune . .	$\frac{1}{19380 \pm 70}$	. . . . .	NEWCOMB, <i>Uranian and Neptunian Systems</i> , p. 63.

ECLIPSES IN 1881.

In the year 1881 there will be four Eclipses, two of the Sun and two of the Moon, and a Transit of the planet Mercury over the disc of the Sun.

I. A Partial Eclipse of the Sun, May 27, 1881, invisible at Washington.

Eclipse begins on the Earth May 27^d 4^h 37^m.1, Washington mean time, in longitude 178° 40'.3 West from Washington, and in latitude 39° 9'.5 North.

Greatest Eclipse 6^h 40^m.3, in longitude 90° 24'.1 East from Washington, and in latitude 69° 3'.9 North.

Eclipse ends on the Earth 8^h 43^m.5, in longitude 17° 18'.0 West from Washington, and in latitude 46° 20'.7 North.

Magnitude of Greatest Eclipse = 0.737, (Sun's diameter = 1).

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
h m				9.96	9.96	9.55	9.56	
4 30	-1.20888	+1.60789	+0.48991	9663	8090	7654	7862	68° 15' 20".1
4 40	1.12241	1.61433	0.49631	9659	8086	7676	7884	70 45 20.2
4 50	1.03594	1.62076	0.50269	9656	8083	7697	7905	73 15 20.2
5 0	0.94947	1.62718	0.50906	9653	8080	7719	7926	75 45 20.3
5 10	0.86300	1.63359	0.51543	9650	8076	7741	7947	78 15 20.3
5 20	0.77653	1.63999	0.52179	9646	8073	7763	7968	80 45 20.4
5 30	0.69006	1.64637	0.52813	9643	8070	7784	7989	83 15 20.4
5 40	0.60359	1.65274	0.53447	9640	8066	7806	8010	85 45 20.5
5 50	0.51712	1.65910	0.54080	9637	8063	7828	8031	88 15 20.5
6 0	0.43064	1.66545	0.54711	9633	8059	7849	8053	90 45 20.6
6 10	0.34417	1.67179	0.55341	9630	8056	7871	8074	93 15 20.6
6 20	0.25770	1.67812	0.55970	9627	8053	7893	8095	95 45 20.7
6 30	0.17122	1.68443	0.56598	9624	8049	7915	8116	98 15 20.7
6 40	-0.08475	1.69073	0.57225	9620	8046	7936	8137	100 45 20.8
6 50	+0.00172	1.69702	0.57851	9617	8043	7958	8158	103 15 20.8
7 0	0.08820	1.70330	0.58476	9614	8039	7980	8179	105 45 20.9
7 10	0.17467	1.70957	0.59100	9611	8036	8001	8200	108 15 21.0
7 20	0.26114	1.71582	0.59723	9607	8033	8023	8221	110 45 21.0
7 30	0.34762	1.72206	0.60344	9604	8029	8045	8242	113 15 21.1
7 40	0.43409	1.72829	0.60964	9601	8026	8066	8264	115 45 21.1
7 50	0.52056	1.73451	0.61583	9597	8023	8088	8285	118 15 21.2
8 0	0.60703	1.74071	0.62202	9594	8019	8110	8306	120 45 21.3
8 10	0.69350	1.74690	0.62819	9591	8016	8131	8327	123 15 21.3
8 20	0.77997	1.75308	0.63435	9588	8013	8153	8348	125 45 21.4
8 30	0.86644	1.75925	0.64050	9585	8009	8175	8369	128 15 21.4
8 40	0.95291	1.76541	0.64664	9581	8006	8196	8390	130 45 21.5
8 50	+1.03938	+1.77156	+0.65277	9578	8003	8218	8411	133 15 21.5

CHANGES OF THE QUANTITIES IN THE TABLES OF DATA IN UNITS OF THE SIXTH PLACE OF DECIMALS.

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A'.	B'.	C'.
^h ^m 4 30	+8646.2	+644.7	+640.0	+144.10	+10.74	+10.67
5 0	8646.8	641.2	637.0	144.11	10.69	10.62
5 30	8647.2	637.8	634.0	144.12	10.63	10.57
6 0	8647.3	634.3	630.8	144.12	10.57	10.51
6 30	8647.3	630.8	627.5	144.12	10.51	10.46
7 0	8647.2	627.2	624.3	144.12	10.45	10.40
7 30	8647.2	623.5	621.0	144.12	10.39	10.35
8 0	8647.0	619.9	617.7	144.12	10.33	10.29
8 30	8646.8	616.3	614.5	144.11	10.27	10.24
9 0	+8646.4	+612.8	+611.4	+144.11	+10.21	+10.19

II. A Total Eclipse of the Moon, June 11, 1881, visible at Washington.

Moon enters Penumbra, June	^d 11	^h 11	^m 6.7	Washington mean time.
Moon enters Shadow,	11	12	2.5	" "
Total Eclipse begins,	11	13	4.8	" "
Middle of Eclipse,	11	13	45.7	" "
Total Eclipse ends,	11	14	26.6	" "
Moon leaves Shadow,	11	15	28.4	" "
Moon leaves Penumbra,	11	16	23.9	" "

First contact of Shadow with Moon's limb 105° from the north point towards the East, when the Moon is in the zenith, in longitude $1^{\circ} 50'$ West from Washington, and in latitude $22^{\circ} 54'$ South.

Last contact of Shadow with Moon's limb 109° from the north point towards the West, when the Moon is in the zenith, in longitude $51^{\circ} 8'$ West from Washington, and in latitude $22^{\circ} 50'$ South.

Magnitude of the Eclipse = 1.365, (Moon's diameter = 1).

III. An Annular Eclipse of the Sun, November 20-21, 1881, invisible at Washington.

Eclipse begins on the Earth November $20^d 21^h 4^m.7$, Washington mean time, in longitude $60^{\circ} 12'.6$ West from Washington, and in latitude $26^{\circ} 41'.7$ South.

Central Eclipse begins on the Earth $22^h 34^m.1$, in longitude $99^{\circ} 45'.9$ West from Washington, and in latitude $51^{\circ} 55'.5$ South.

Central Eclipse at Noon $23^h 34^m.0$, in longitude $3^{\circ} 2'.3$ East from Washington, and in latitude $84^{\circ} 35'.8$ South.

Central Eclipse ends on the Earth November $21^d 0^h 10^m.8$, in longitude $127^{\circ} 49'.8$ East from Washington, and in latitude $62^{\circ} 15'.1$ South.

Eclipse ends on the Earth $1^h 40^m.2$, in longitude $78^{\circ} 44'.5$ East from Washington, and in latitude $39^{\circ} 1'.7$ South.

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
^h ^m 21 0	-1.40550	-0.18238	-1.28240	9.97 2117	9.97 3610	n 9.54 0539	n 9.52 9319	318° 27' 35.1
21 10	1.31428	0.19332	1.29332	2113	3606	0570	9350	320 57 34.4
21 20	1.22305	0.20425	1.30423	2109	3602	0600	9382	323 27 33.6
21 30	-1.13181	-0.21517	-1.31512	2105	3598	0630	9413	325 57 32.8

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.								
Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
^h ^m				9.97	9.97	n 9.54	n 9.52	
21 40	-1.04057	-0.22608	-1.32601	2100	3594	0661	9444	328° 27' 32.0
21 50	0.94933	0.23698	1.33689	2096	3590	0691	9475	330 57 31.2
22 0	0.85808	0.24787	1.34775	2092	3586	0721	9507	333 27 30.5
22 10	0.76683	0.25875	1.35860	2088	3582	0752	9538	335 57 29.7
22 20	0.67557	0.26962	1.36944	2084	3578	0782	9569	338 27 28.9
22 30	0.58431	0.28048	1.38027	2080	3574	0812	9600	340 57 28.1
22 40	0.49305	0.29133	1.39109	2075	3570	0843	9631	343 27 27.4
22 50	0.40179	0.30217	1.40190	2071	3566	0873	9663	345 57 26.6
23 0	0.31052	0.31301	1.41270	2067	3562	0903	9694	348 27 25.8
23 10	0.21925	0.32384	1.42349	2063	3558	0934	9725	350 57 25.0
23 20	0.12798	0.33465	1.43426	2059	3554	0964	9756	353 27 24.2
23 30	-0.03670	0.34545	1.44502	2055	3550	0994	9787	355 57 23.5
23 40	+0.05457	0.35624	1.45577	2050	3546	1025	9819	358 27 22.7
23 50	0.14585	0.36703	1.46651	2046	3542	1055	9850	0 57 21.9
0 0	0.23713	0.37781	1.47725	2042	3538	1085	9881	3 27 21.1
0 10	0.32841	0.38858	1.48798	2038	3534	1115	9912	5 57 20.4
0 20	0.41969	0.39933	1.49869	2034	3530	1146	9943	8 27 19.6
0 30	0.51098	0.41007	1.50939	2030	3526	1176	9974	10 57 18.8
0 40	0.60226	0.42080	1.52008	2025	3522	1206	0006	13 27 18.0
0 50	0.69354	0.43153	1.53076	2021	3517	1236	0037	15 57 17.2
1 0	0.78483	0.44225	1.54143	2017	3513	1267	0068	18 27 16.5
1 10	0.87611	0.45296	1.55209	2013	3509	1297	0099	20 57 15.7
1 20	0.96740	0.46366	1.56273	2009	3505	1327	0130	23 27 14.9
1 30	1.05869	0.47434	1.57336	2005	3501	1357	0161	25 57 14.1
1 40	+1.14997	-0.48501	-1.58398	2001	3497	1388	0192	28 27 13.3
FOR SHADOW.								
Washington Mean Time.	B.	C.	Washington Mean Time.	B.	C.			
^h ^m			^h ^m					
22 30	-0.82640	-0.83434	23 20	-0.88057	-0.88834			
22 40	0.83725	0.84516	23 30	0.89137	0.89910			
22 50	0.84809	0.85597	23 40	0.90216	0.90985			
23 0	0.85893	0.86677	23 50	0.91295	0.92059			
23 10	0.86976	0.87756	0 0	0.92373	0.93133			
23 20	-0.88057	-0.88834	0 10	-0.93450	-0.94205			
A and μ are given in the Table for Penumbra, and the values of log E, log F, log G, and log H may be obtained from the corresponding values for Penumbra, by numerically increasing log E and decreasing log F by 0.000004, and by numerically decreasing log G by 0.000028, and increasing log H by 0.000029.								
CHANGES OF THE QUANTITIES IN THE TABLES OF DATA IN UNITS OF THE SIXTH PLACE OF DECIMALS.								
Washington Mean Time.	For one Minute.			For one Second.				
	A.	B.	C.	A'.	B'.	C'.		
^h ^m								
21 0	+9121.8	-1094.3	-1092.3	+152.03	-18.24	-18.20		
21 30	9123.7	1091.5	1089.2	152.06	18.19	18.15		
22 0	9125.0	1088.6	1085.9	152.08	18.14	18.10		
22 30	9126.0	1085.7	1082.5	152.10	18.09	18.04		
23 0	9126.8	1082.8	1079.2	152.11	18.05	17.99		
23 30	+9127.5	-1080.0	-1075.8	+152.12	-18.00	-17.93		

◆ The first figures of this and the following logarithms are 9.53

CHANGES OF THE QUANTITIES IN THE TABLES OF DATA IN UNITS OF THE SIXTH PLACE OF DECIMALS.

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A'.	B'.	C'.
^h 0 0	+9128.0	-1077.0	-1072.5	+152.13	-17.95	-17.87
^m 0 30	9128.3	1074.0	1069.3	152.14	17.90	17.82
1 0	9128.6	1071.1	1066.0	152.14	17.85	17.77
1 30	9128.7	1068.2	1062.8	152.14	17.80	17.71
2 0	+9128.7	-1065.3	-1059.6	+152.14	-17.75	-17.66

IV. A Partial Eclipse of the Moon, December 4-5, 1881, invisible at Washington.

Moon enters Penumbra, December ^d 4 ^h 21 ^m 8.4 Washington mean time.

Moon enters Shadow, ^d 4 ^h 22 ^m 19.5 " "

Middle of Eclipse, ^d 5 ^h 0 ^m 0.2 " "

Moon leaves Shadow, ^d 5 ^h 1 ^m 40.8 " "

Moon leaves Penumbra, ^d 5 ^h 2 ^m 52.3 " "

First contact of Shadow with the Moon's limb 61° from the north point towards the East, when the Moon is in the zenith, in longitude $158^\circ 2'$ West from Washington, and in latitude $22^\circ 0'$ North.

Last contact of Shadow with the Moon's limb 63° from the north point towards the West, when the Moon is in the zenith, in longitude $153^\circ 28'$ East from Washington, and in latitude $22^\circ 3'$ North.

Magnitude of the Eclipse = 0.979, (Moon's diameter = 1).

V. A Transit of Mercury over the Sun's disc, November 7, 1881, invisible at Washington.

The following are the times of phases at the centre of the Earth:

Ingress, Exterior Contact, November ^d 7 ^h 5 ^m 7 ^s 54 Washington mean time.

Ingress, Interior Contact, ^d 7 ^h 5 ^m 9 ^s 37 " "

Least Dist. of Centres $231''.1$, ^d 7 ^h 7 ^m 48 ^s 20 " "

Egress, Interior Contact, ^d 7 ^h 10 ^m 27 ^s 2 " "

Egress, Exterior Contact, ^d 7 ^h 10 ^m 28 ^s 46 " "

First contact of Mercury with Sun's limb 129° from the north point towards the East, when the planet is in the zenith, in longitude $80^\circ 47'.3$ West from Washington, and in latitude $16^\circ 42'.9$ South.

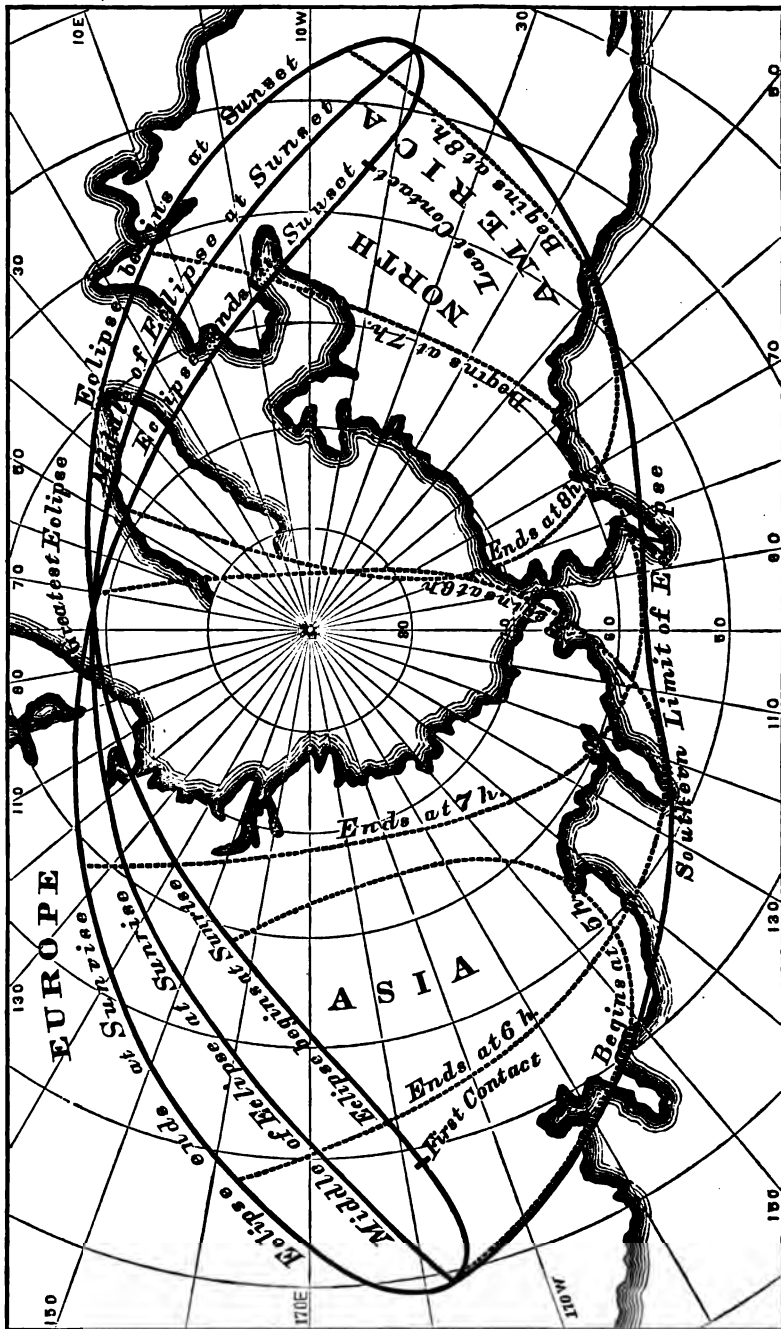
Last contact of Mercury with Sun's limb 78° from the north point towards the West, when the planet is in the zenith, in longitude $161^\circ 29'.9$ West from Washington, and in latitude $16^\circ 33'.3$ South.

The Washington mean time of exterior contact at Ingress and Egress for any point on the surface of the Earth may be computed from the following formulæ, in which ρ is the radius of the Earth at the place, φ' the geocentric latitude, and λ the longitude West from Washington:—

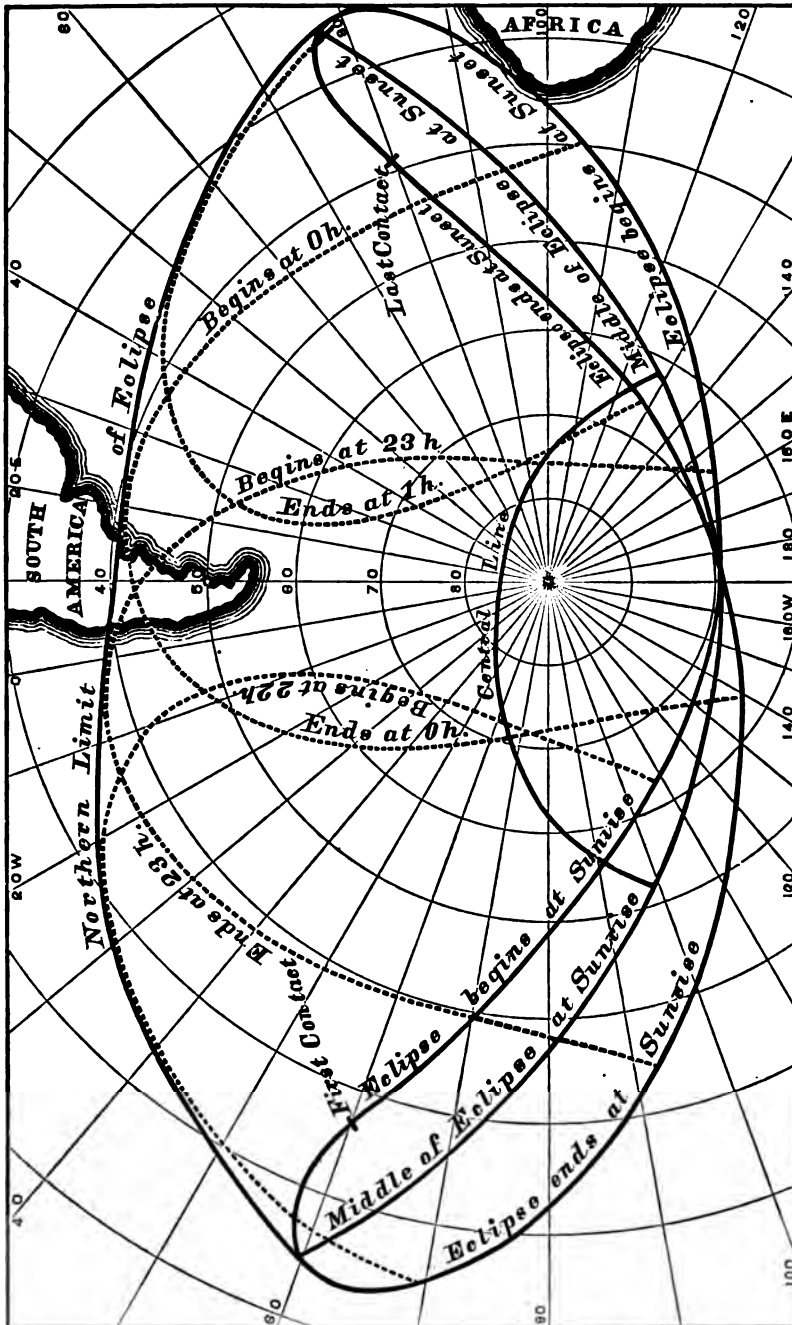
Ingress ^h 5 ^m 7 ^s 53.8 + $26.01 \rho \sin \varphi' - 34.78 \rho \cos \varphi' \cos (\lambda + 22^\circ 56')$.

Egress ^h 10 ^m 28 ^s 46.2 + $8.44 \rho \sin \varphi' + 42.43 \rho \cos \varphi' \cos (\lambda + 111^\circ 16')$.

OUTLINES AND PATH OF THE PENUMBRA OF THE PARTIAL ECLIPSE OF MAY 27, 1881.



OUTLINES AND PATH OF THE PENUMBRA, AND THE CENTRAL LINE
OF THE ANNULAR ECLIPSE OF NOVEMBER 20-21, 1881.



ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.

January.

STAR'S—				AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0. $\Delta\alpha$ $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	$N'n.$	$S'n.$
B. A. C. 7063	6	-0.08 + 1.1	-15 27.1	^d 11 1.4	+ 9 24.8	-0.5665	.5854	+1890	+ 3	-78
γ^1 Capricorni	6	0.06 1.1	15 33.6	13 33.1	+11 50.6	+0.0224	.5864	.1930	+34	-38
γ^2 Capricorni	5	0.06 1.1	15 22.3	14 20.1	-11 24.2	-0.0123	.5858	.1943	+33	-40
B. A. C. 7145	6 $\frac{1}{2}$	0.06 0.9	16 32.8	14 50.2	-10 55.3	+1.2428	.5854	.1951	+74	+40
8 Aquarii	6	-0.01 1.5	13 30.7	22 50.2	- 3 13.5	-0.1402	.5789	.2067	+27	-48
9 Aquarii	6	0.00 + 1.4	-13 59.6	23 20.2	- 2 44.6	+0.4392	.5785	+2073	+60	-16
ν Aquarii	4 $\frac{1}{2}$	+0.02 1.8	11 51.1	2 53.6	+ 0 40.8	-0.9317	.5757	.2117	-16	-90
19 Aquarii	6	0.08 2.2	10 15.2	9 32.1	+ 7 4.7	-1.0874	.5702	.2192	-26	-90
Yarnall 9373	6 $\frac{1}{2}$	0.09 1.7	12 5.0	10 48.1	+ 8 17.9	+1.0074	.5693	.2204	+78	+17
B. A. C. 7562	6 $\frac{1}{2}$	0.14 2.3	9 34.9	18 3.1	- 8 42.7	+0.1442	.5639	.2268	+45	-32
ϵ^1 Capricorni	6	+0.14 + 2.3	- 9 37.7	18 5.2	- 8 40.7	+0.1971	.5639	+2268	+48	-29
ϵ^2 Capricorni	6 $\frac{1}{2}$	0.15 2.3	9 49.4	18 38.4	- 8 8.6	+0.5188	.5634	.2272	+69	-12
30 Aquarii	5 $\frac{1}{2}$	0.21 3.0	7 5.8	3 2 10.3	- 0 52.5	-0.4753	.5582	.2323	+13	-69
B. A. C. 7744	6	0.25 3.5	5 18.4	6 25.6	+ 3 14.0	-1.2806	.5554	.2344	+42	-90
44 Aquarii	6	0.26 3.4	5 58.8	8 23.4	+ 5 7.7	-0.1432	.5541	.2353	+31	-48
51 Aquarii	6	+0.29 + 3.5	- 5 26.3	11 34.0	+ 8 11.8	+0.0607	.5522	+2364	+42	-36
κ Aquarii	5	0.35 3.7	4 50.4	17 49.2	- 9 45.6	+0.9437	.5485	.2379	+85	+12
3 Piscium	6	0.46 5.2	- 0 27.1	4 4 28.3	+ 0 32.3	-0.9849	.5433	.2388	-15	-90
κ Piscium	4 $\frac{1}{2}$	0.59 5.4	+ 0 36.3	16 55.1	-11 25.2	+0.9074	.5384	.2364	+90	+10
9 Piscium	6	0.59 5.4	0 28.2	17 4.2	-11 16.5	+1.0822	.5384	.2364	+90	+22
Yarnall 10387	7	+0.61 + 5.8	+ 1 42.6	18 55.0	- 9 29.1	+0.2436	.5378	+2358	+54	-27
16 Piscium	6	0.64 5.8	1 26.7	21 27.4	- 7 1.6	+1.1171	.5370	.2349	+90	+25
19 Piscium	6	0.69 6.3	2 49.7	5 2 15.8	- 2 22.4	+0.8155	.5356	.2328	+90	+ 5
ω Piscium	4	0.78 7.4	6 12.4	8 29.6	+ 3 39.5	-1.2465	.5341	.2295	-36	-84
36 Piscium	6 $\frac{1}{2}$	0.88 7.8	7 34.0	16 52.4	+11 46.4	-0.7856	.5325	.2240	- 3	-71
δ Piscium	5 $\frac{1}{2}$	+0.90 + 7.7	+ 7 31.9	18 49.9	-10 19.8	-0.2957	.5323	+2225	+24	-55
45 Piscium	6	0.93 7.4	7 2.1	21 18.7	- 7 55.7	+0.7732	.5320	.2207	+90	+ 3
75 Piscium	6 $\frac{1}{2}$	1.18 8.9	12 19.2	6 17 12.7	+11 20.9	-0.5844	.5318	.2019	+ 8	-72
η Piscium	3 $\frac{1}{2}$	1.35 9.5	14 44.1	7 5 18.7	- 0 55.9	-0.8029	.5327	.1876	- 4	-76
101 Piscium	6	1.36 9.1	14 3.3	7 24.1	+ 1 5.6	+0.3128	.5330	.1850	+58	-18
104 Piscium	6 $\frac{1}{2}$	+1.38 + 9.0	+13 41.1	9 5.3	+ 2 43.5	+1.0198	.5332	+1828	+90	+24
105 Piscium	6	1.41 9.7	15 48.2	9 16.3	+ 2 54.2	-1.2156	.5332	.1825	-37	-74
B. A. C. 524	6 $\frac{1}{2}$	1.42 9.4	15 10.8	10 37.3	+ 4 12.6	-0.3018	.5334	.1807	+33	-50
4 Arietis	6 $\frac{1}{2}$	1.46 9.8	16 21.9	13 22.8	+ 6 52.8	-1.0812	.5332	.1770	-24	-74
ϵ Arietis	6	1.53 9.8	17 14.3	17 47.8	+11 9.5	-1.2534	.5345	.1709	-42	-73
B. A. C. 632	6	+1.56 + 9.8	+17 41.1	20 51.5	- 9 52.6	-1.2179	.5350	+1665	-38	-73
26 Arietis	6 $\frac{1}{2}$	1.75 9.5	19 19.7	8 9 43.4	+ 2 34.5	-0.9856	.5376	.1468	-18	-71
B. A. C. 782	6 $\frac{1}{2}$	1.76 9.1	18 21.5	11 9.3	+ 3 57.7	+0.2754	.5378	.1445	+56	-15
μ Arietis	5 $\frac{1}{2}$	1.82 9.1	19 30.4	15 18.3	+ 7 58.5	-0.3855	.5387	.1376	+18	-51
47 Arietis	6	1.92 8.7	20 11.6	22 43.5	- 8 50.5	-0.1590	.5403	.1249	+31	-36
ϵ Arietis, <i>mult.</i>	4 $\frac{1}{2}$	+1.94 + 8.9	+20 51.9	23 15.6	- 8 19.4	-0.8260	.5404	+1240	- 7	-69
ζ Arietis	4 $\frac{1}{2}$	2.03 8.2	20 36.3	9 6 39.1	- 1 10.5	+0.3258	.5421	.1108	+60	- 8
B. A. C. 1032	6 $\frac{1}{2}$	2.08 7.8	20 4.8	9 27.3	+ 1 32.2	+1.2050	.5426	.1057	+90	+50
γ^1 Arietis	5	2.08 8.0	20 43.2	9 36.8	+ 1 41.4	+0.5219	.5427	.1053	+75	+ 2
γ^2 Arietis	6	2.09 7.7	20 19.1	10 20.5	+ 2 23.7	+1.0359	.5428	.1040	+90	+35
65 Arietis	6	+2.10 + 7.7	+20 22.9	11 7.0	+ 3 8.7	+1.0476	.5430	+1025	+90	+36
66 Arietis	6 $\frac{1}{2}$	2.14 8.1	22 23.7	12 57.2	+ 4 55.3	-0.9716	.5433	.0991	-18	-68
9 Tauri	6	2.20 7.8	22 49.1	16 56.0	+ 8 46.2	-1.0571	.5441	.0915	-26	-67
B. A. C. 1155	7	2.25 7.4	22 46.5	21 3.6	-11 14.3	-0.6498	.5449	.0837	+ 3	-63
B. A. C. 1171	6 $\frac{1}{2}$	2.26 7.3	23 3.2	22 13.3	-10 6.9	-0.8596	.5452	.0814	-11	-67
32 Tauri	6	2.20 6.7	22 8.2	10 2 12.2	- 6 15.9	+0.4574	.5458	.0738	+70	+ 2
33 Tauri	6	+2.30 + 6.9	+22 49.9	2 17.0	- 6 11.2	-0.3007	.5458	+0736	+23	-39
36 Tauri	6 $\frac{1}{2}$	2.35 6.8	23 46.8	5 38.8	- 2 56.1	-1.1099	.5463	.0668	-31	-66
A ¹ Tauri	4 $\frac{1}{2}$	2.34 6.2	21 45.4	5 50.4	- 2 44.9	+1.1308	.5464	.0664	+90	+46
A ² Tauri	6	2.34 6.1	21 41.4	6 8.0	- 2 27.8	+1.2242	.5464	.0658	+90	+56
B. A. C. 1281	6	2.39 5.9	22 6.6	9 37.1	+ 0 54.3	+0.9793	.5469	.0589	+90	+35
62 Tauri, <i>mult.</i>	6	+2.45 + 5.7	+24 1.5	14 43.6	+ 5 50.6	-0.8580	.5475	+0484	-11	-66

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

January.

STAR'S—				AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0. $\Delta\alpha$ $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N'n.	S'n.
ν^1 Tauri	4 $\frac{1}{2}$	+2.45 + 5.2	+22 32.6	10 15 49.3	+ 6 54.1	+0.8275	.5477	+.0462	+90	+26
ν^2 Tauri	6	2.45 5.3	22 43.6	16 16.8	+ 7 20.7	+0.6466	.5477	.0454	+90	+16
Rumk. 1250	6 $\frac{1}{2}$	2.51 4.4	22 42.8	23 9.5	-10 0.1	+0.9251	.5481	.0311	+90	+34
τ Tauri	4 $\frac{1}{2}$	2.52 4.5	22 43.7	23 11.0	- 9 58.8	+0.9099	.5481	.0311	+90	+33
B. A. C. 1518	6	2.60 4.1	24 24.1	11 5 36.6	- 3 46.2	-0.7843	.5483	.0178	- 6	-66
99 Tauri	6 $\frac{1}{2}$	+2.60 + 3.8	+23 45.7	6 20.6	- 3 3.6	-0.0643	.5483	+.0161	+36	-20
103 Tauri	6	2.65 3.1	24 6.4	11 5.1	+ 1 31.4	-0.3937	.5484	+.0063	+17	-38
121 Tauri	6	2.74 1.3	23 57.6	23 44.1	-10 14.9	-0.3173	.5479	-.0199	+22	-33
B. A. C. 1774	6 $\frac{1}{2}$	2.73 0.9	23 15.2	12 1 30.9	- 8 31.6	+0.4268	.5477	.0236	+68	+ 6
B. A. C. 1801	6	2.74 0.6	23 8.8	3 24.5	- 6 41.7	+0.4990	.5476	.0273	+74	+ 9
132 Tauri	5 $\frac{1}{2}$	+2.79 + 0.5	+24 31.5	6 1.1	- 4 10.4	-1.1212	.5472	-.0330	-33	-66
141 Tauri	6	2.79 - 0.8	22 23.7	11 58.9	+ 1 35.6	+1.0109	.5463	.0449	+90	+39
1 Geminorum	5	2.81 0.8	23 16.1	13 5.5	+ 2 40.1	+0.0012	.5462	.0471	+40	-19
2 Geminorum	6 $\frac{1}{2}$	2.83 0.5	23 38.8	14 29.4	+ 3 52.5	-0.4731	.5459	.0497	+13	-47
B. A. C. 1970	6 $\frac{1}{2}$	2.80 1.3	22 12.5	15 39.1	+ 5 8.6	+1.0529	.5457	.0524	+90	+41
3 Geminorum	6	+2.82 - 1.2	+23 7.8	15 43.3	+ 5 12.6	+0.0238	.5457	-.0526	+41	-18
6 Geminorum	6	2.82 1.4	22 56.0	16 56.2	+ 6 23.2	+0.1795	.5454	.0550	+51	-10
η Geminorum	3 $\frac{1}{2}$	2.82 1.7	22 32.4	18 9.1	+ 7 33.7	+0.5389	.5451	.0573	+78	+ 8
μ Geminorum	3	2.82 2.1	22 34.3	21 56.5	+11 13.6	+0.2579	.5443	.0648	+55	- 7
δ Geminorum	6	2.85 4.1	21 54.0	13 11 30.9	+ 0 21.5	-0.0272	.5408	.0906	+38	-25
ζ Geminor., mult.	4	+2.84 - 4.9	+20 44.5	17 33.5	+ 6 12.5	+0.6786	.5391	-.1016	+90	+12
56 Geminorum	5 $\frac{1}{2}$	2.85 6.1	20 39.9	14 2 11.2	- 9 26.2	-0.1777	.5363	.1165	+30	-36
61 Geminorum	6	2.84 6.4	20 29.5	4 36.9	- 7 5.1	-0.2728	.5354	.1207	+35	-42
θ Geminorum	5 $\frac{1}{2}$	2.81 7.7	18 47.8	14 4.3	+ 2 4.6	+0.3968	.5320	.1358	+65	- 8
B. A. C. 2605	6	2.84 7.8	19 37.6	16 55.8	+ 4 50.7	-0.9181	.5309	.1402	-13	-71
3 Cancri	6	+2.79 - 8.6	+17 37.9	21 22.0	+ 9 8.8	+0.6505	.5295	-.1468	+89	+ 5
B. A. C. 2731	6 $\frac{1}{2}$	2.79 9.1	17 21.7	15 1 59.2	-10 22.6	+0.2635	.5280	.1535	+55	-17
γ Cancri	4 $\frac{1}{2}$	2.79 9.2	18 0.2	3 4.2	- 9 19.6	-0.6141	.5277	.1550	+ 6	-68
β Cancri	7 $\frac{1}{2}$	2.79 9.2	18 0.0	3 4.4	- 9 19.4	-0.6106	.5277	.1550	+ 6	-67
δ Cancri	6	2.75 10.0	17 26.1	9 58.5	- 2 37.8	-1.0864	.5254	.1643	-25	-73
B. A. C. 3031	6 $\frac{1}{2}$	+2.68 -11.2	+14 37.9	16 1 16.9	-11 46.9	-0.6384	.5202	-.1825	+ 5	-73
B. A. C. 3122	6 $\frac{1}{2}$	2.62 11.6	12 2.7	8 39.4	- 4 37.4	+0.8474	.5179	.1902	+90	+11
ξ Leonis	6	2.56 12.5	11 49.4	20 16.6	+ 6 39.4	-1.1798	.5150	.2007	-31	-78
λ Leonis	6	2.55 12.3	10 14.2	20 18.2	+ 6 41.0	+0.5637	.5150	.2007	+77	- 7
σ Leonis	3 $\frac{1}{2}$	2.52 12.7	10 25.8	17 1 9.5	+11 23.9	-0.6331	.5139	.2044	+ 6	-77
Weisse IX, 1035	7	+2.47 -12.8	+ 8 14.3	9 0.2	- 4 59.0	+0.1523	.5124	-.2099	+48	-30
B. A. C. 3398	6	2.47 12.8	9 29.6	9 16.1	- 4 43.5	-1.2856	.5123	.2101	-42	-81
B. A. C. 3407	6	2.46 13.0	8 52.6	10 10.1	- 3 51.1	-0.7962	.5122	.2107	- 3	-81
π Leonis	5	2.45 13.0	8 36.7	11 17.0	- 2 46.1	-0.7377	.5120	.2113	0	-80
14 Sextantis	6	2.42 12.7	6 11.3	14 48.9	+ 0 39.8	+1.1711	.5115	.2135	+90	+31
16 Sextantis	6	+2.42 -13.0	+ 6 45.0	16 6.9	+ 1 55.5	+0.2760	.5114	-.2143	+56	-24
B. A. C. 3529	6	2.39 13.2	7 1.5	22 8.0	+ 7 46.3	-1.3237	.5108	.2173	-47	-83
Weisse, X, 315	6 $\frac{1}{2}$	2.36 12.9	4 32.0	18 1 9.3	+10 42.4	+0.7452	.5106	.2186	+90	+ 1
34 Sextantis	6	2.29 13.1	4 12.0	9 57.4	- 4 44.5	-0.8295	.5105	.2217	- 5	-86
36 Sextantis	6	2.28 12.9	3 6.6	11 18.9	- 3 25.4	+0.0588	.5105	.2221	+43	-36
B. A. C. 3726	6	+2.26 -12.6	+ 1 39.3	15 5.6	+ 0 14.8	+0.8029	.5106	-.2231	+90	+ 4
55 Leonis	6	2.24 12.7	1 22.0	16 56.6	+ 2 2.7	+0.7031	.5107	.2235	+90	- 2
p^2 Leonis	6	2.20 12.5	+ 0 38.2	21 9.5	+ 6 8.7	+0.5521	.5111	.2243	+75	-10
p^1 Leonis	7	2.19 12.2	- 0 41.6	19 0 9.6	+ 9 3.4	+1.3234	.5115	.2246	+90	+46
p^3 Leonis	5	2.17 12.5	+ 0 34.5	2 33.2	+11 22.9	-0.5909	.5118	.2249	+ 8	-78
B. A. C. 3901	6	2.11 12.2	- 1 2.9	10 1.5	- 5 21.4	-0.5125	.5132	.2250	+12	-72
ϵ Leonis	5	+2.10 -11.8	- 2 21.0	11 18.2	- 4 7.3	+0.6096	.5134	-.2249	+80	- 7
B. A. C. 3955	5 $\frac{1}{2}$	2.07 12.1	1 46.9	15 33.3	+ 0 0.4	-0.9601	.5144	.2246	-14	-90
B. A. C. 4006	6	2.01 11.2	4 40.5	22 9.0	+ 6 24.6	+0.6845	.5162	.2233	+85	- 3
B. A. C. 4063	6 $\frac{1}{2}$	1.96 11.2	4 49.2	20 4 38.9	-11 17.0	-0.6061	.5184	.2214	+ 7	-80
14 Virginis	6 $\frac{1}{2}$	1.91 10.1	8 15.4	12 41.4	- 3 28.9	+1.3074	.5216	.2182	+82	+45
B. A. C. 4201	6 $\frac{1}{2}$	+1.86 -10.0	- 8 1.2	17 3.3	+ 0 45.0	+0.1058	.5236	-.2160	+44	-34

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.

January.

STAR'S—				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0. $\Delta\alpha$ $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N'n.	S'n.	
<i>q</i> Virginis	6	+1.84 -0.7	- 8 47.9	20 19 58.7	+ 3 35.1	+0.3064	.5250	-.2144	+55	-23	
B. A. C. 4312	6½	1.77 9.3	9 41.6	21 4 42.4	-11 57.2	-0.5879	.5297	.2086	+ 6	-79	
75 Virginis	6	1.61 6.8	14 45.2	22 0 34.9	+ 7 17.2	+0.7769	.5429	.1901	+75	+ 3	
83 Virginis	6	1.55 6.4	15 34.9	5 58.2	-11 30.2	+0.6359	.5467	.1838	+71	- 5	
85 Virginis	6	1.54 6.5	15 10.3	6 28.7	-11 0.7	+0.1125	.5471	.1832	+39	-33	
B. A. C. 4700	5½	+1.43 -5.8	-15 44.4	17 54.4	+ 0 1.7	-1.2966	.5561	-.1677	-55	-90	
B. A. C. 4722	6	1.42 5.1	17 38.8	19 54.9	+ 1 58.0	+0.3491	.5577	.1646	+51	-21	
B. A. C. 4739	6	1.41 4.8	18 9.9	21 20.0	+ 3 20.1	+0.6552	.5589	.1624	+70	- 3	
B. A. C. 4923, <i>mult.</i>	6	1.24 3.2	20 52.7	23 13 56.4	- 4 39.2	+0.9833	.5728	.1335	+69	+18	
B. A. C. 5023	6	1.16 2.3	21 57.6	21 50.5	+ 2 57.2	+1.0950	.5794	.1297	+68	+28	
O. Arg. S. 14428	6½	+1.13 -3.0	-20 17.0	22 28.1	+ 3 33.4	-0.6912	.5797	-.1161	-12	-90	
Anonymous	6½	1.05 2.0	21 43.8	24 6 25.7	+11 12.8	-0.0692	.5861	.0984	+20	-43	
Lalande 28414	6	1.06 1.7	22 44.8	6 31.5	+11 18.4	+0.9543	.5862	.0982	+67	+17	
Lalande 28466	6	1.07 1.7	22 45.6	7 8.9	+11 54.3	+0.9067	.5866	.0968	+67	+13	
B. A. C. 5220	6½	1.03 1.2	23 27.0	10 45.8	- 8 37.2	+1.2859	.5893	.0891	+67	+63	
B. A. C. 5254	6	+1.00 -1.1	-23 37.4	12 55.9	- 6 32.2	+1.2575	.5909	-.0831	+67	+52	
δ Scorpii	2½	0.94 1.4	22 16.9	15 28.7	- 4 5.4	-0.3042	.5927	.0770	+ 6	-50	
B. A. C. 5335	6½	0.93 0.9	23 16.9	17 43.3	- 1 56.2	+0.5398	.5943	.0712	+54	- 9	
B. A. C. 5354	6½	0.93 0.9	23 22.0	18 44.6	- 0 57.3	+0.5540	.5949	.0687	+54	- 8	
B. A. C. 5394	7	0.91 0.6	24 7.0	20 41.2	+ 0 54.6	+1.1809	.5962	.0638	+66	+39	
B. A. C. 5418	6½	+0.90 -0.6	-23 59.0	21 43.9	+ 1 54.8	+0.9810	.5970	-.0610	+66	+20	
19 Scorpii	5½	0.88 0.5	23 52.9	23 21.3	+ 3 28.3	+0.7816	.5981	.0568	+66	+ 6	
ρ Ophiuchi	5	0.85 0.7	23 10.3	25 1 16.6	+ 5 18.9	-0.0377	.5992	.0519	+17	-42	
B. A. C. 5571	7	0.79 0.2	24 14.1	7 23.3	+11 10.7	+0.7626	.6028	.0356	+66	+ 4	
B. A. C. 5623	6½	0.76 -0.1	24 18.7	9 54.2	-10 24.6	+0.7579	.6039	.0237	+66	+ 4	
18 Ophiuchi	6	+0.75 0.0	-24 25.7	10 28.4	- 9 51.8	+0.8576	.6042	-.0270	+66	+11	
B. A. C. 5641	6½	0.75 0.0	24 37.7	11 4.8	- 9 16.9	+1.0411	.6044	.0254	+66	+25	
22 Ophiuchi	6½	0.72 0.3	23 18.9	12 25.7	- 7 59.4	-0.3029	.6050	.0215	+ 1	-59	
24 Ophiuchi	6½	0.70 -0.3	22 57.6	13 10.4	- 7 16.5	-0.6733	.6053	.0196	-20	-90	
B. A. C. 5709	6	0.71 +0.3	24 54.6	14 19.6	- 6 10.2	+1.2534	.6058	.0162	+65	+54	
26 Ophiuchi	6	+0.71 +0.3	-24 48.4	14 24.0	- 6 6.0	+1.1487	.6058	-.0162	+65	+36	
B. A. C. 5767	6½	0.68 0.3	24 50.4	17 19.7	+ 3 17.6	+1.1452	.6069	-.0077	+65	+36	
39 Ophiuchi, <i>mult.</i>	6	0.62 0.3	24 9.3	21 7.4	+ 0 20.6	+0.4515	.6082	+0.0030	+42	-14	
B. A. C. 5831	6	0.62 0.3	23 56.4	21 9.5	+ 0 22.6	+0.2389	.6082	.0030	+28	-26	
θ Ophiuchi	3½	0.62 0.6	24 52.7	22 36.0	+ 1 45.5	+1.1792	.6087	.0070	+65	+40	
B. A. C. 5862	7	+0.60 +0.3	-23 43.8	23 23.3	+ 2 30.9	+0.0436	.6089	+0.0093	+18	-37	
B. A. C. 5863	6½	0.60 0.4	24 8.0	23 46.2	+ 2 52.8	+0.4476	.6090	.0105	+42	-14	
ν Ophiuchi, <i>var.</i>	5	0.58 0.5	24 3.9	26 0 14.7	+ 3 20.2	+0.3846	.6091	.0119	+38	-18	
ϵ Ophiuchi	5	0.57 0.5	23 52.1	2 7.9	+ 5 8.6	+0.2173	.6096	.0173	+28	-27	
B. A. C. 5989	7	0.52 0.5	23 37.4	6 55.8	+ 9 44.5	+0.0884	.6106	.0311	+22	-35	
B. A. C. 6023	6½	+0.50 +0.8	-24 10.0	9 1.7	+11 45.0	+0.6980	.6110	+0.0371	+64	0	
4 Sagittarii	5	0.47 0.8	23 48.2	12 41.2	- 8 44.7	+0.4925	.6112	.0474	+48	-12	
B. A. C. 6088	6	0.46 0.6	22 46.6	13 29.6	- 7 58.3	-0.4839	.6112	.0497	- 6	-73	
7 Sagittarii	6	0.47 0.9	24 16.8	13 48.8	- 7 40.0	+1.0184	.6112	.0506	+66	+23	
9 Sagittarii	4½	0.46 1.0	24 21.7	14 11.5	- 7 18.2	+1.1181	.6113	.0517	+66	+32	
O. Arg. S. 17540	7	+0.46 +1.0	-24 18.8	14 13.2	- 7 16.6	+1.0720	.6113	+0.0520	+66	+28	
B. A. C. 6111	6½	0.46 1.0	24 24.2	14 40.5	- 6 50.4	+1.1844	.6113	.0531	+66	+40	
B. A. C. 6161	6	0.43 1.0	23 43.5	17 7.2	- 4 29.9	+0.6510	.6113	.0603	+61	- 3	
14 Sagittarii	6½	0.41 0.5	21 44.6	18 6.4	- 3 33.3	-1.2422	.6112	.0629	-60	-90	
B. A. C. 6222	6½	0.39 0.8	22 58.5	20 58.6	- 0 48.2	+0.1643	.6111	.0710	+30	-30	
B. A. C. 6336	6½	0.34 0.7	21 29.7	27 2 54.9	+ 4 53.0	-0.8215	.6103	.0875	-23	-90	
B. A. C. 6343	6	+0.35 +1.3	-23 36.3	3 5.9	+ 5 3.6	+1.2697	.6103	+0.0878	+67	+55	
B. A. C. 6347	6½	0.33 0.7	21 9.0	3 17.7	+ 5 14.9	-1.1235	.6102	.0883	-45	-90	
B. A. C. 6346	6½	0.35 1.2	23 17.0	3 18.0	+ 5 15.2	+0.9720	.6102	.0883	+67	+19	
28 Sagittarii	6	0.32 1.1	22 30.8	6 2.8	+ 7 53.0	+0.4673	.6097	.0960	+50	-14	
B. A. C. 6400	6½	0.32 1.1	22 58.9	7 29.0	+ 9 15.7	+1.0676	.6094	.0997	+67	+36	
30 Sagittarii	6	+0.30 +1.0	-22 17.8	7 44.3	+ 9 30.3	+0.4196	.6093	+1.005	+48	-16	

ELEMENTS FOR FACILITATING THE PREDICTION OF ECLIPSATIONS OF PLANETS AND STARS BY THE MOON.

January.

STAR'S—				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		$\Delta\alpha$	$\Delta\delta$		^d ^h ^m	^h ^m					
31 Sagittarii	6	+0.30	+0.9	-22 3.5	27 8 13.6	+ 9 58.4	+0.2349	.6092	+1019	+37	-27
33 Sagittarii	6	0.30	0.9	21 30.2	8 56.3	+10 39.3	-0.2381	.6090	.1037	+11	-54
γ^1 Sagittarii	5	0.31	1.1	22 53.4	8 58.3	+10 41.2	+1.1280	.6090	.1037	+67	+22
γ^2 Sagittarii	5	0.31	1.1	22 49.1	9 19.6	+11 1.7	+1.0942	.6089	.1048	+67	+20
ξ^1 Sagittarii	6	0.28	0.8	20 48.6	10 12.3	+11 52.1	-0.7863	.6087	.1069	-19	-90
ξ^2 Sagittarii	4	+0.29	+0.8	-21 15.7	10 20.4	+11 59.9	-0.3282	.6086	+1074	+ 7	-60
σ Sagittarii	4	0.27	1.0	21 54.8	12 56.5	- 9 30.5	+0.6012	.6078	.1142	+61	- 6
O. Arg. S. 19098	6	0.27	1.0	21 52.8	14 12.3	- 8 17.8	+0.7136	.6074	.1173	+68	+ 1
B. A. C. 6539	6	0.26	1.0	21 10.4	14 25.6	- 8 5.1	+0.0447	.6073	.1180	+28	-37
π Sagittarii	3	0.26	1.0	21 12.7	14 52.6	- 7 39.2	+0.1364	.6071	.1190	+33	-32
B. A. C. 6561	6	+0.27	+1.2	-21 51.2	15 53.1	- 6 41.2	+0.8888	.6068	+1217	+68	+12
30 Aquarii	5.4	0.19	2.1	7 5.8	30 13 2.4	+11 47.8	-0.5565	.5665	.2342	+ 9	-76
44 Aquarii	6	0.21	2.2	5 58.8	19 6.0	- 6 21.5	-0.2362	.5631	.2376	+26	-53
51 Aquarii	6	0.22	2.3	5 26.3	22 11.5	- 3 22.5	-0.0393	.5613	.2390	+37	-42
κ Aquarii	5	0.25	2.5	4 50.4	31 4 16.0	+ 2 29.3	+0.5239	.5579	.2408	+85	+ 5
3 Piscium	6	+0.31	+3.5	- 0 27.1	14 35.6	-11 32.1	-1.0794	.5532	+2419	-21	-90

February.

B. A. C. 8152	6.4	+0.38	+3.7	- 0 21.7	1 1 3.6	- 1 25.5	+1.3564	.5493	+2400	+90	+52
κ Piscium	4.4	0.40	3.9	+ 0 36.3	2 38.0	+ 0 5.8	+0.7563	.5488	.2400	+90	+ 1
9 Piscium	6	0.40	3.8	0 28.2	2 46.4	+ 0 14.2	+0.9286	.5488	.2400	+90	+12
Yarnall 10387	7	0.41	4.1	1 42.6	4 33.9	+ 1 57.8	+0.1002	.5481	.2393	+45	-34
16 Piscium	6	0.43	4.0	1 26.6	7 1.2	+ 4 20.2	+0.9581	.5473	.2384	+90	+14
19 Piscium	6	+0.47	+4.3	+ 2 49.7	11 39.8	+ 8 49.6	+0.6563	.5460	+2364	+85	- 4
ω Piscium	4	0.53	5.2	6 12.4	17 41.2	- 9 21.0	-1.3801	.5445	.2331	-61	-84
36 Piscium	6.4	0.59	5.6	7 34.9	2 1 46.4	- 1 31.7	-0.9345	.5428	.2317	-12	-83
d Piscium	5.4	0.61	5.5	7 31.9	3 40.0	+ 0 18.2	-0.4539	.5425	.2304	+16	-66
45 Piscium	6	0.61	5.4	7 2.1	6 3.8	+ 2 37.3	+0.5971	.5421	.2240	+79	- 7
75 Piscium	6.4	+0.85	+6.8	+12 19.2	3 1 19.4	- 2 44.6	-0.7518	.5408	+2046	- 1	-76
η Piscium	3.4	1.01	7.4	14 44.1	13 4.2	+ 8 37.3	-0.9723	.5408	.1901	-16	-76
101 Piscium	6	1.02	7.2	14 3.3	15 6.1	+10 35.2	+0.1277	.5409	.1875	+47	-27
104 Piscium	6.4	1.03	7.1	13 41.1	16 44.5	-11 49.6	+0.8241	.5410	.1851	+90	+11
B. A. C. 524	6.4	1.06	7.5	15 10.8	18 14.1	-10 23.0	-0.4800	.5411	.1830	+14	-62
4 Arietis	6.4	+1.11	+7.8	+16 21.9	20 55.3	- 7 46.9	-1.2497	.5412	+1792	-42	-74
26 Arietis	6.4	1.39	8.0	19 19.7	4 16 48.2	+11 26.9	-1.1577	.5428	.1483	-33	-71
27 Arietis	6	1.37	7.2	17 10.8	16 57.8	+11 36.2	+1.1692	.5428	.1480	+90	+41
B. A. C. 782	6.4	1.41	7.6	18 21.4	18 12.4	-11 11.7	+0.0891	.5429	.1460	+45	-25
μ Arietis	5.4	1.47	7.7	19 30.3	22 16.7	- 7 15.5	-0.5655	.5434	.1388	+ 9	-62
47 Arietis	6	+1.57	+7.5	+20 11.5	5 5 34.5	- 0 11.9	-0.3388	.5442	+1262	+21	-46
ϵ Arietis, <i>mult.</i>	4.4	1.59	7.8	20 51.9	6 6.1	+ 0 18.7	-0.9995	.5443	.1252	-20	-69
ζ Arietis	4.4	1.68	7.2	20 36.3	13 23.6	+ 7 21.8	+0.1445	.5452	.1119	+48	-18
B. A. C. 1032	6.4	1.71	6.8	20 4.7	16 9.5	+10 2.1	+1.0177	.5455	.1066	+90	+33
γ^1 Arietis	5	1.72	7.0	20 43.1	16 18.8	+10 11.0	+0.3392	.5455	.1062	+61	- 7
γ^2 Arietis	6	+1.71	+6.8	+20 19.1	17 2.0	+10 52.8	+0.8498	.5455	+1049	+90	+22
65 Arietis	6	1.72	6.8	20 22.9	17 48.5	+11 37.8	+0.8620	.5456	.1036	+90	+23
66 Arietis	6.4	1.77	7.4	22 23.7	19 37.4	-10 36.9	-1.1410	.5458	.1000	-33	-68
9 Tauri	6	1.74	7.1	22 49.1	23 33.2	- 6 49.0	-1.2241	.5461	.0924	-44	-67
B. A. C. 1155	7	1.79	6.8	22 46.5	6 3 38.4	- 2 52.0	-0.8187	.5465	.0846	- 8	-67
B. A. C. 1171	6.4	+1.92	+6.7	+23 3.2	4 47.6	- 1 45.1	-1.0261	.5465	+0.8923	-23	-67
32 Tauri	6	1.97	6.0	22 8.2	8 44.6	+ 2 4.0	+0.2841	.5469	.0743	+57	- 7
33 Tauri	6	1.98	6.3	22 49.8	8 49.3	+ 2 8.6	-0.4688	.5469	.0741	+13	-49
36 Tauri	6.4	2.04	6.2	23 46.8	12 9.7	+ 5 22.2	-1.2717	.5471	.0675	-57	-66
A ¹ Tauri	4.4	+2.00	+5.5	+21 45.4	12 21.3	+ 5 33.5	+0.9554	.5472	+0.671	+90	+33
A ² Tauri	6	2.00	5.5	21 41.3	12 38.7	+ 5 50.3	+1.0493	.5472	.0665	+90	+40
B. A. C. 1281	6	2.06	5.2	22 6.6	16 6.6	+ 9 11.3	+0.8085	.5475	.0596	+90	+24
62 Tauri, <i>mult.</i>	6	+2.16	+5.4	+24 1.3	21 11.7	- 9 53.9	-1.0170	.5477	+0.492	-23	-66

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.

February.

STAR'S—				AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0. $\Delta\alpha$ $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N'n.	S'n.
α^1 Tauri	5 $\frac{1}{2}$	+2.13 + 4.6	+22 1.3	d h m 6 21 51.8	- 9 15.1	+1.2151	.5477	+.0478	+90	+57
ν^1 Tauri	4 $\frac{1}{2}$	2.15 4.8	22 32.6	22 17.1	- 8 50.6	+0.6622	.5477	.0469	+90	+16
ν^3 Tauri	6	2.15 4.7	22 43.6	22 44.8	- 8 23.8	+0.4825	.5478	.0459	+72	+ 6
Rumk. 1250	6 $\frac{1}{2}$	2.25 3.9	22 42.8	7 5 36.3	- 1 46.0	+0.7651	.5478	.0320	+90	+24
τ Tauri	4 $\frac{1}{2}$	2.25 3.9	22 43.7	5 37.4	- 1 44.9	+0.7499	.5478	.0318	+90	+23
B. A. C. 1518	6	+2.36 + 3.8	+24 24.1	12 2.4	+ 4 27.1	-0.9324	.5476	+.0186	-17	-66
99 Tauri	6 $\frac{1}{2}$	2.34 3.6	23 45.7	12 46.3	+ 5 9.6	-0.2145	.5476	.0171	+33	-28
103 Tauri	6	2.41 3.2	24 6.4	17 30.7	+ 9 44.5	-0.5380	.5474	+.0064	+ 9	-49
121 Tauri	6	2.56 1.5	23 57.6	8 6 10.2	- 2 1.1	-0.4489	.5463	-.0188	+14	-43
B. A. C. 1774	6 $\frac{1}{2}$	2.55 1.1	23 15.2	7 57.1	- 0 17.8	+0.2955	.5461	.0224	+58	- 1
B. A. C. 1801	6	+2.55 + 0.7	+23 8.8	9 50.9	+ 1 32.3	+0.3667	.5458	-.0263	+64	+ 4
132 Tauri	5 $\frac{1}{2}$	2.62 + 0.7	24 31.6	12 27.8	+ 4 3.9	-1.2357	.5455	.0316	-49	-66
141 Tauri	6	2.65 - 0.6	22 23.7	18 26.3	+ 9 50.6	+0.9001	.5443	.0437	+90	+31
1 Geminorum	5	2.67 0.6	23 16.1	19 33.1	+10 55.2	-0.1168	.5443	.0459	+33	-25
2 Geminorum	6 $\frac{1}{2}$	2.69 0.6	23 38.9	20 48.2	+11 52.2	-0.5967	.5441	.0483	+ 6	-56
B. A. C. 1970	6 $\frac{1}{2}$	+2.67 - 1.3	+22 12.5	22 7.1	-10 35.9	+0.9342	.5438	-.0511	+90	+33
3 Geminorum	6	2.69 1.0	23 7.8	22 11.3	-10 31.9	-0.0924	.5438	.0511	+34	-25
6 Geminorum	6	2.70 1.2	22 56.0	23 24.3	- 9 21.2	+0.0632	.5436	.0535	+43	-16
7 Geminorum	3 $\frac{1}{2}$	2.70 1.5	22 32.4	9 0 37.4	- 8 10.4	+0.4334	.5433	.0560	+68	+ 3
μ Geminorum	3	2.74 1.9	22 34.4	4 25.4	- 4 20.9	+0.1705	.5426	.0634	+50	-12
ζ Geminorum	6	+2.82 - 4.0	+21 54.0	18 1.6	+ 8 39.8	-0.1190	.5394	-.0889	+33	-30
δ Geminor., <i>mult.</i>	4	2.84 5.1	20 44.5	10 0 4.8	- 9 28.6	+0.5947	.5378	.0998	+92	+ 7
56 Geminorum	5 $\frac{1}{2}$	2.88 6.1	20 39.9	8 43.2	- 1 6.7	-0.2485	.5355	.1149	+26	-40
61 Geminorum	6	2.89 6.4	20 29.5	11 8.9	+ 1 14.4	-0.3398	.5348	.1190	+21	-46
g Geminorum	5 $\frac{1}{2}$	2.91 8.0	18 47.8	20 36.3	+10 24.0	+0.3438	.5320	.1341	+61	-10
B. A. C. 2605	6	+2.93 - 8.3	+19 37.6	23 27.7	-10 49.2	-0.9652	.5311	-.1386	-17	-71
3 Cancri	6	2.91 9.1	17 37.8	11 3 53.6	- 6 32.2	+0.6177	.5298	.1451	+84	+ 3
B. A. C. 2731	6 $\frac{1}{2}$	2.93 9.8	17 21.7	8 30.2	- 2 4.2	+0.2310	.5284	.1518	+53	-18
γ Cancri	4 $\frac{1}{2}$	2.94 9.9	18 0.2	9 35.1	- 1 1.2	-0.6441	.5281	.1534	+ 4	-70
δ Cancri	7 $\frac{1}{2}$	2.94 9.9	18 0.0	9 35.2	- 1 1.1	-0.6403	.5281	.1534	+ 4	-69
δ Cancri	6	+2.94 -10.8	+17 26.1	16 28.0	+ 5 39.2	-1.1026	.5261	-.1628	-26	-73
B. A. C. 3031	6 $\frac{1}{2}$	2.94 12.7	14 37.9	12 7 42.2	- 3 34.1	-0.6280	.5220	.1813	+ 5	-72
B. A. C. 3122	6 $\frac{1}{2}$	2.91 13.5	12 2.7	15 1.8	+ 3 32.4	+0.8680	.5202	.1893	+90	+12
ξ Leonis	6	2.90 14.6	11 49.3	13 2 33.4	- 9 16.1	-1.1321	.5179	.2000	-27	-78
λ Leonis	6	2.88 14.6	10 14.1	2 35.0	- 9 14.7	+0.6064	.5179	.2000	+81	- 4
σ Leonis	3 $\frac{1}{2}$	+2.88 -15.0	+10 25.7	7 23.6	- 4 34.5	-0.5767	.5170	-.2038	+ 9	-72
Weisse IX, 1035	7	2.86 15.5	8 14.2	15 9.8	+ 2 58.0	+0.2200	.5160	.2095	+52	-26
B. A. C. 3398	6	2.87 15.7	9 29.5	15 25.5	+ 3 13.3	-1.2120	.5160	.2097	-34	-81
B. A. C. 3407	6	2.86 15.6	8 52.6	16 18.9	+ 4 5.1	-0.7214	.5158	.2103	+ 1	-81
π Leonis	5	2.85 15.7	8 36.6	17 25.2	+ 5 9.5	-0.6627	.5157	.2110	+ 4	-80
14 Sextantis	6	+2.83 -15.8	+ 6 11.2	20 54.8	+ 8 33.1	+1.2474	.5154	-.2131	+90	+39
16 Sextantis	6	2.84 16.0	6 44.9	22 12.0	+ 9 48.0	+0.3577	.5153	.2139	+61	-19
B. A. C. 3529	6	2.83 16.4	7 15	14 4 9.1	- 8 25.2	-1.2252	.5148	.2171	-35	-83
Weisse X, 315	6 $\frac{1}{2}$	2.80 16.3	4 32.0	7 8.4	- 5 31.0	+0.8431	.5147	.2185	+90	+ 7
34 Sextantis	6	2.77 16.7	4 12.0	15 50.6	+ 2 56.1	-0.7105	.5146	.2218	+ 1	-86
36 Sextantis	6	+2.77 -16.6	+ 3 6.5	17 11.2	+ 4 14.4	+0.1725	.5146	-.2221	+49	-30
B. A. C. 3726	6	2.74 16.5	1 39.2	20 55.3	+ 7 52.0	+0.9260	.5148	.2231	+90	+12
55 Leonis	6	2.74 16.5	1 22.0	22 45.0	+ 9 38.6	+0.8299	.5149	.2236	+90	+ 6
ρ^1 Leonis	6	2.73 16.5	0 38.1	15 2 55.5	-10 18.3	+0.6865	.5153	.2243	+88	- 3
ρ^2 Leonis	5	2.71 16.7	+ 0 34.4	8 15.2	- 5 7.8	-0.4434	.5160	.2249	+16	-67
B. A. C. 3901	6	2.68 16.7	- 1 3.0	15 39.3	+ 2 3.3	-0.3532	.5172	.2249	+21	-60
B. A. C. 3903	6	+2.68 -16.8	- 0 14.9	15 44.0	+ 2 7.9	-1.2362	.5172	-.2249	-36	-90
ϵ Leonis	5	2.68 16.4	2 21.1	16 54.9	+ 3 16.7	+0.7686	.5174	.2249	+79	+ 2
B. A. C. 3955	5 $\frac{1}{2}$	2.66 16.5	1 47.0	21 7.5	+ 7 21.9	-0.7909	.5183	.2244	+ 3	-90
B. A. C. 4006	6	2.63 16.2	4 40.6	16 3 40.2	-10 16.8	+0.8592	.5184	.2232	+86	+ 7
B. A. C. 4063	6 $\frac{1}{2}$	2.61 16.0	4 49.2	10 6.7	- 4 1.9	-0.4197	.5220	.2214	+17	-65
B. A. C. 4201	6 $\frac{1}{2}$	+2.55 -15.0	- 8 1.3	22 27.1	+ 7 56.2	+0.3077	.5266	-.2158	+56	-23

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.

February.

Star's—				At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag	Red'ns from 1881.0. $\Delta\alpha$ $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	α'	γ'	N'n.	S'n.
		α δ	δ	d h m	h m				$^{\circ}$	$^{\circ}$
γ Virginis	6	+2.54 -14.9	-8 48.0	17 1 21.8	+10 45.6	+0.5127	.5278	-.2141	+69	-12
Rumk. 4137	7	2.50 14.7	8 34.4	8 54.9	-5 55.3	-1.3250	.5311	.2089	-51	-90
B. A. C. 4312	6 $\frac{1}{2}$	2.50 14.4	9 41.7	10 4.6	-4 47.7	-0.3747	.5317	.2080	+17	-62
ϵ Virginis	5	2.40 12.9	12 5.5	18 3 8.2	+11 43.4	-1.2508	.5407	.1923	-44	-90
75 Virginis	6	2.41 12.0	14 45.3	6 0.8	-9 29.6	+1.0111	.5425	.1891	+76	+19
83 Virginis	6	+2.39 -11.4	-15 35.0	11 26.6	-4 4.5	+0.8732	.5458	-.1827	+75	+10
85 Virginis	6	2.37 11.5	15 10.5	11 57.4	-3 44.7	+0.3479	.5473	.1821	+53	-20
B. A. C. 4700	5 $\frac{1}{2}$	2.29 10.5	15 44.5	23 31.0	+7 25.6	-1.0695	.5536	.1662	-30	-90
B. A. C. 4722	6	2.29 9.7	17 38.8	19 1 33.2	+9 23.7	+0.5905	.5550	.1632	+66	-7
B. A. C. 4739	6	2.28 9.5	18 10.0	2 59.6	+10 47.1	+0.8989	.5559	.1611	+72	+12
B. A. C. 4923, mult	6	+2.14 -7.4	-20 52.8	19 54.7	+3 6.5	+1.2331	.5673	-.1320	+69	+43
ϵ Libræ	4 $\frac{1}{2}$	2.06 7.2	19 20.5	20 2 17.4	+9 15.3	-1.1598	.5715	.1196	-44	-90
O. Arg. S., 14428	6 $\frac{1}{2}$	2.04 6.9	20 17.1	4 38.7	+11 31.5	-0.4625	.5731	.1148	+1	-70
Anonymous	6 $\frac{1}{2}$	1.97 5.4	21 43.9	12 49.3	-4 36.1	+0.1641	.5784	.0973	+33	-30
Lalande 28414	6	1.98 5.0	22 44.8	12 55.2	-4 30.4	+1.2006	.5785	.0971	+68	+41
Lalande 28466	6	+1.97 -5.0	-22 45.7	13 33.7	-3 53.4	+1.1529	.5788	-.0958	+68	+35
B. A. C. 5278	6	1.88 4.8	21 8.4	20 53.9	+3 10.1	-1.1564	.5833	.0792	-48	-90
δ Scorpii	2 $\frac{1}{2}$	1.86 4.3	22 16.9	22 8.7	+4 22.1	-0.0795	.5840	.0761	+17	-44
B. A. C. 5335	6 $\frac{1}{2}$	1.86 3.9	23 16.9	21 0 27.6	+6 35.7	+0.7757	.5853	.0707	+67	+5
B. A. C. 5354	6 $\frac{1}{2}$	1.85 3.7	23 22.0	1 30.9	+7 36.5	+0.7896	.5859	.0680	+67	+7
B. A. C. 5418	6 $\frac{1}{2}$	+1.81 -3.2	-23 59.1	4 36.1	+10 34.6	+1.2215	.5875	-.0607	+66	+45
19 Scorpii	5 $\frac{1}{2}$	1.79 3.0	23 52.9	6 16.9	-11 48.5	+1.0177	.5883	.0565	+66	+23
ρ Ophiuchi, mult.	5	1.75 2.9	23 10.3	8 16.1	-9 54.0	+0.1842	.5893	.0515	+30	-29
B. A. C. 5571	7	1.69 2.0	24 14.2	14 35.9	-3 49.1	+0.9922	.5921	.0356	+66	+21
B. A. C. 5623	6 $\frac{1}{2}$	1.66 1.7	24 18.3	17 12.2	-1 18.9	+0.9770	.5932	.0289	+66	+20
18 Ophiuchi	6	+1.65 -1.6	-24 25.7	17 47.6	-0 44.9	+1.0864	.5934	-.0274	+66	+29
B. A. C. 5641	6 $\frac{1}{2}$	1.65 1.6	24 37.7	18 25.4	-0 8.6	+1.2790	.5937	.0235	+66	+62
22 Ophiuchi	6 $\frac{1}{2}$	1.62 1.8	23 18.9	19 49.3	+1 11.9	-0.0951	.5942	.0219	+11	-46
24 Ophiuchi	6 $\frac{1}{2}$	1.60 1.9	22 57.6	20 35.6	+1 56.3	-0.4729	.5944	-.0201	-9	-72
39 Ophiuchi, mult.	6	1.52 0.8	24 9.3	22 4 50.6	+9 51.5	+0.6632	.5969	+0.0200	+60	-1
B. A. C. 5831	6	+1.52 -0.9	-23 56.4	4 52.9	+9 53.8	+0.4468	.5969	+0.0020	+42	-14
B. A. C. 5862	7	1.47 0.7	23 43.8	7 11.8	-11 52.9	+0.2453	.5975	.0081	+29	-25
B. A. C. 5868	6 $\frac{1}{2}$	1.48 0.6	24 8.0	7 35.5	-11 30.2	+0.6564	.5976	.0092	+59	-2
δ Ophiuchi, var.	5	1.45 0.5	21 3.9	8 5.2	-11 1.6	+0.5915	.5977	.0105	+53	-6
ϵ Ophiuchi	5	1.43 0.5	23 52.2	10 2.7	-9 8.9	+0.4194	.5981	.0159	+41	-16
B. A. C. 5989	7	+1.36 -0.1	-23 37.4	15 1.8	-4 21.9	+0.2820	.5988	+0.0293	+33	-23
B. A. C. 5992	6 $\frac{1}{2}$	1.34 -0.6	22 8.4	15 6.1	-4 17.7	-1.2112	.5988	.0293	-58	-90
B. A. C. 6023	6 $\frac{1}{2}$	1.34 +0.3	24 10.0	17 12.7	-2 16.2	+0.8995	.5990	.0350	+66	+14
4 Sagittarii	5	1.29 0.5	23 48.2	21 0.7	+1 22.6	+0.6855	.5992	.0451	+64	0
5 Sagittarii	5 $\frac{1}{2}$	1.30 0.6	24 16.4	21 9.3	+1 30.8	+1.1641	.5992	.0456	+66	+38
B. A. C. 6088	6	+1.28 +0.2	-22 46.6	21 50.9	+2 10.7	-0.3090	.5992	+0.0475	+3	-59
7 Sagittarii	6	1.29 0.7	24 16.8	22 10.9	+2 29.9	+1.2187	.5993	.0482	+66	+45
B. A. C. 6161	6	1.25 0.8	23 43.4	22 1 37.1	+5 47.8	+0.8406	.5993	.0576	+67	+10
14 Sagittarii	6 $\frac{1}{2}$	1.21 0.3	21 44.6	2 38.5	+6 46.8	-1.0864	.5993	.0602	-43	-90
B. A. C. 6222	6 $\frac{1}{2}$	1.19 0.9	22 58.5	5 37.4	+9 38.4	+0.3396	.5992	.0683	+40	-20
B. A. C. 6336	6 $\frac{1}{2}$	+1.09 +0.8	-21 29.7	11 47.3	-8 26.6	-0.6731	.5986	+0.0841	-15	-90
B. A. C. 6347	6 $\frac{1}{2}$	1.08 0.7	21 9.0	12 10.9	-8 4.0	-0.9442	.5985	.0851	-33	-90
B. A. C. 6346	6 $\frac{1}{2}$	1.10 1.3	23 17.0	12 11.2	-8 3.7	+1.1508	.5985	.0851	+67	+35
28 Sagittarii	6	1.07 1.3	22 30.9	15 2.2	-5 19.6	+0.6352	.5989	.0924	+63	-3
B. A. C. 6400	6 $\frac{1}{2}$	1.04 1.3	22 58.9	16 31.6	-3 53.7	+1.2408	.5978	.0963	+67	+47
30 Sagittarii	6	1.05 1.4	22 17.8	16 47.5	-3 38.5	+0.5818	.5978	.0968	+59	-7
31 Sagittarii	6	+1.03 +1.3	-22 3.5	17 17.8	-3 9.4	+0.3935	.5977	+0.0981	+46	-17
33 Sagittarii	6	1.02 1.3	21 30.2	18 2.1	-2 26.9	-0.0888	.5976	.1001	+19	-45
ν Sagittarii	5	1.04 1.7	22 49.0	18 26.2	-2 3.7	+1.2644	.5975	.1011	+67	+52
ϵ Sagittarii	6	0.99 1.1	20 48.6	19 20.9	-1 11.3	-0.6476	.5973	.1033	-11	-89
ρ Sagittarii	4	1.00 1.2	21 15.7	19 29.3	-1 3.2	-0.1828	.5973	.1036	+14	-51
σ Sagittarii	4	+0.98 +1.6	-21 54.8	22 11.0	+1 32.0	+0.7570	.5967	+1.103	+68	+4

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.

February.

STAR'S—				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0.		Apparent Declination.	Washington Mean Time.	Hour Angle <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	<i>N'n.</i>	<i>S'n.</i>
		$\Delta\alpha$	$\Delta\delta$								
O. Arg. S., 19098	6	+0.97	+1.8	-21 52.8	^{d h m} 23 23 29.5	^{h m} + 2 47.4	+0.8686	.5964	+1134	+68	+11
B. A. C. 6539	6	0.95	1.6	21 10.3	23 43.3	+ 3 0.6	+0.1896	.5964	.1141	+36	-29
π Sagittarii	3	0.95	1.6	21 12.7	24 0 11.3	+ 3 27.5	+0.2813	.5963	.1151	+41	+24
B. A. C. 6561	6	0.95	1.8	21 51.2	1 13.9	+ 4 27.5	+1.0435	.5960	.1178	+68	+24
Lalande 36857	6½	0.83	1.8	19 38.0	8 50.7	+11 46.2	-0.2050	.5938	.1354	+16	-52
<i>f</i> Sagittarii	5	+0.79	+2.1	-20 2.7	14 39.2	- 6 39.0	+1.0278	.5915	+1442	+70	+22
57 Sagittarii	5½	0.76	2.1	19 20.7	16 59.3	- 4 24.4	+0.6829	.5907	.1530	+70	- 1
B. A. C. 7063	6	0.61	1.9	15 27.1	25 8 46.2	+10 46.0	-0.5202	.5839	.1834	+ 5	-74
B. A. C. 7097	6	0.60	2.2	16 56.0	10 34.0	-11 30.3	+1.2841	.5831	.1866	+73	+47
τ^1 Capricorni	6	0.59	2.0	15 33.4	11 20.3	-10 45.8	+0.0612	.5827	.1879	+36	-36
τ^2 Capricorni	5	+0.58	+2.0	-15 22.2	12 8.0	- 9 59.9	+0.0259	.5823	+1893	+34	-38
B. A. C. 7145	6½	0.59	2.3	16 32.8	12 38.5	- 9 30.6	+1.2891	.5821	.1901	+74	+48
8 Aquarii	6	0.52	2.0	13 30.6	20 43.4	- 1 43.9	-0.1361	.5781	.2025	+26	-47
9 Aquarii	6	C.51	2.0	13 59.5	21 13.6	- 1 14.8	+0.4435	.5778	.2032	+60	-16
ν Aquarii	4½	0.49	1.9	11 51.1	26 0 47.8	+ 2 11.6	-0.9464	.5762	.2080	-18	-90
19 Aquarii	6	+0.44	+1.9	-10 15.2	7 25.9	+ 8 35.1	-1.1264	.5732	+2162	-30	-90

March.

36 Piscium	6½	+0.45	+3.6	+ 7 34.9	1 12 3.0	+10 33.0	-1.0972	.5501	+2284	-24	-83
δ Piscium	5½	0.46	3.7	7 31.8	13 54.2	-11 39.5	-0.6244	.5499	.2271	+ 6	-78
45 Piscium	6	0.47	3.7	7 2.0	16 15.0	- 9 23.4	+0.4133	.5497	.2251	+65	-16
75 Piscium	6½	0.59	4.8	12 19.1	2 11 3.7	+ 8 47.8	-0.9583	.5492	.2063	-15	-78
η Piscium	3½	0.70	5.2	14 44.0	22 30.7	- 4 8.2	-1.1926	.5495	.1918	-34	-75
101 Piscium	6	+0.71	+5.0	+14 3.2	3 0 29.5	- 2 13.4	-0.1081	.5496	+1891	+33	-41
104 Piscium	6½	0.73	4.9	13 41.0	2 5.4	- 0 40.7	+0.5791	.5496	.1868	+78	- 3
B. A. C. 524	6½	0.74	5.2	15 10.7	3 32.6	+ 0 43.5	-0.7131	.5497	.1858	0	-75
Venus				14 11.1	8 7.2	+ 5 9.0	+1.1617	.5169	.1600	+90	+38
27 Arietis	6	0.98	5.3	17 10.7	4 1 41.6	- 1 52.1	+0.8950	.5510	.1495	+90	+20
B. A. C. 782	6½	+1.00	+5.5	+18 21.4	2 54.3	- 0 41.9	-0.1739	.5511	+1474	+30	-39
μ Arietis	5½	1.05	5.7	19 30.3	6 52.8	+ 3 8.5	-0.8245	.5514	.1401	- 7	-71
47 Arietis	6	1.15	5.6	20 11.5	14 0.3	+10 1.6	-0.6047	.5519	.1272	+ 6	-64
ϵ Arietis, mult.	4½	1.16	5.7	20 51.9	14 31.2	+10 31.5	-1.2589	.5519	.1261	-48	-69
δ Arietis	4½	1.22	5.1	19 16.6	20 10.4	- 8 0.7	+1.1233	.5523	.1155	+90	+40
ζ Arietis	4½	+1.24	+5.4	+20 36.3	21 38.7	- 6 35.5	-0.1311	.5524	+1127	+32	-33
B. A. C. 1032	6½	1.28	5.1	20 4.7	5 0 21.3	- 3 58.3	+0.7323	.5524	.1075	+90	+14
τ^1 Arietis	5	1.28	5.3	20 43.1	0 30.5	- 3 49.5	+0.0612	.5524	.1073	+43	-22
τ^2 Arietis	6	1.29	5.1	20 19.0	1 12.6	- 3 8.8	+0.5658	.5524	.1059	+79	+ 5
65 Arietis	6	1.30	5.1	20 22.9	1 57.7	- 2 25.2	+0.5780	.5524	.1044	+80	+ 6
B. A. C. 1143	6	+1.41	+4.6	+20 33.0	11 2.3	+ 6 20.9	+1.2642	.5526	+0.863	+90	+62
B. A. C. 1155	7	1.44	5.4	22 46.5	11 36.7	+ 6 54.2	-1.0889	.5526	.0852	-29	-67
32 Tauri	6	1.50	4.8	22 8.2	16 37.3	+11 44.5	+0.0027	.5526	.0749	+40	-22
33 Tauri	6	1.50	5.0	22 42.8	16 42.0	+11 49.1	-0.7437	.5526	.0749	- 3	-67
Δ^1 Tauri	4½	1.55	4.4	21 45.4	20 10.5	- 8 49.5	+0.6678	.5525	.0677	+90	+15
Δ^2 Tauri	6	+1.55	+4.3	+21 41.3	20 27.6	- 8 33.0	+0.7610	.5525	+0.671	+90	+20
B. A. C. 1291	6	1.60	4.2	22 6.5	23 52.2	- 5 15.3	+0.5219	.5523	.0601	+76	+ 7
κ^1 Tauri	5½	1.67	3.8	22 1.3	6 5 32.3	+ 0 13.2	+0.9262	.5518	.0482	+90	+32
κ^2 Tauri	6½	1.67	3.8	21 55.7	5 33.9	+ 0 14.7	+1.0287	.5518	.0482	+90	+40
ν^1 Tauri	4½	1.68	4.0	22 32.6	5 57.3	+ 0 37.3	+0.3776	.5518	.0474	+64	+ 1
ν^2 Tauri	6	+1.69	+3.9	+22 43.6	6 24.2	+ 1 3.3	+0.1994	.5517	+0.465	+52	- 9
Rumk. 1250	6½	1.79	3.3	22 42.8	13 10.8	+ 7 36.1	+0.4812	.5512	.0324	+72	+ 8
τ Tauri	4½	1.79	3.3	22 43.7	13 11.9	+ 7 37.2	+0.4661	.5512	.0324	+71	+ 7
B. A. C. 1518	6	1.88	3.2	24 24.1	19 32.6	-10 14.9	-1.2020	.5504	.0195	-43	-66
99 Tauri	6½	+1.88	+3.0	+23 45.7	20 16.0	- 9 33.0	-0.4889	.5503	+0.176	+12	-46
103 Tauri	6	1.94	2.6	24 6.4	7 0 57.8	- 5 0.7	-0.8087	.5497	+0.078	- 8	-66
121 Tauri	6	2.10	1.2	23 57.6	13 31.8	+ 7 8.1	-0.7150	.5476	-0.185	- 2	-66
B. A. C. 1774	6½	+2.12	+0.8	+23 15.2	15 18.1	+ 8 50.8	+0.0266	.5472	-0.217	+41	-15

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

March.

Star's—				At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0. Δa Δd	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N'n.	S'n.
B. A. C. 1801	6	+2.14 + 0.5	+23 8.8	7 17 11.2	+10 40.2	+0.0986	.5468	-.0256	+46	-12
141 Tauri	6	2.23 - 0.5	22 23.7	8 1 44.5	- 5 3.6	+0.6359	.5449	.0428	+88	+15
1 Geminorum	5	2.24 0.5	23 16.1	2 51.2	- 3 59.1	-0.3758	.5446	.0450	+18	-41
2 Geminorum	6½	2.25 0.4	23 38.9	4 6.0	- 2 46.8	-0.8529	.5442	.0473	-11	-67
B. A. C. 1970	6½	2.27 1.1	22 12.5	5 24.7	- 1 30.7	+0.6728	.5441	.0499	+90	+17
3 Geminorum	6	+2.28 - 0.8	+23 7.9	5 28.9	- 1 26.6	-0.3496	.5441	-.0501	+20	-40
6 Geminorum	6	2.29 1.0	22 56.0	6 41.7	- 0 16.2	-0.1934	.5438	.0524	+28	-31
7 Geminorum	3½	2.30 1.4	22 32.4	7 54.8	+ 0 54.5	+0.1766	.5434	.0548	+50	-11
μ Geminorum	3	2.34 1.7	22 34.4	11 42.3	+ 4 34.6	-0.0823	.5424	.0621	+35	-25
d Geminorum	6	2.46 3.6	21 54.0	9 1 18.3	- 6 15.8	-0.3575	.5384	.0674	+19	-44
ζ Geminor., mult.	4	+2.50 - 4.6	+20 44.5	7 21.9	- 0 23.8	+0.3615	.5365	-.0983	+62	- 5
56 Geminorum	5½	2.57 5.7	20 40.0	16 1.1	+ 7 58.9	-0.4686	.5340	.1132	+13	-54
61 Geminorum	6	2.59 5.9	20 29.5	18 27.1	+10 20.3	-0.5560	.5333	.1171	+ 9	-60
g Geminorum	5½	2.65 7.6	18 47.8	10 3 55.7	- 4 28.9	+0.1403	.5305	.1323	+48	-21
B. A. C. 2605	6	2.67 7.7	19 37.6	6 47.5	- 1 42.4	-1.1623	.5297	.1365	-34	-71
3 Cancri	6	+2.69 - 8.9	+17 37.8	11 14.0	+ 2 35.9	+0.4253	.5284	-.1431	+66	- 7
5 Cancri	6	2.70 9.2	16 46.8	11 36.5	+ 2 57.7	+1.3128	.5283	.1435	+90	+64
B. A. C. 2731	6½	2.71 9.4	17 21.7	15 51.1	+ 7 4.5	+0.0470	.5272	.1497	+42	-28
ζ Cancri	4½	2.72 9.4	18 0.2	16 56.1	+ 8 7.5	-0.8245	.5269	.1511	- 7	-72
γ Cancri	7½	2.72 9.4	18 0.0	16 56.3	+ 8 7.7	-0.8214	.5269	.1511	- 7	-72
d Cancri	6	+2.74 -10.2	+17 26.1	23 49.9	- 9 11.2	-1.2691	.5252	-.1603	-46	-73
B. A. C. 3031	6½	2.81 12.6	14 37.9	11 15 4.6	+ 5 35.9	-0.7669	.5215	.1789	- 3	-70
B. A. C. 3122	6½	2.83 13.8	12 2.6	22 24.0	-11 17.8	+0.7416	.5201	.1868	+90	+ 5
ξ Leonis	6	2.85 14.9	11 49.3	12 9 54.2	- 0 7.8	-1.2266	.5184	.1977	-37	-78
κ Leonis	6	2.86 15.2	10 14.1	9 55.8	- 0 6.2	+0.5075	.5184	.1979	+72	-10
ο Leonis	3½	+2.87 -15.6	+10 25.7	14 43.3	+ 4 32.8	-0.6637	.5179	-.2019	+ 4	-78
Weisse IX, 1035	7	2.89 16.4	8 14.2	22 27.4	-11 56.7	+0.1514	.5172	.2076	+48	-29
B. A. C. 3398	6	2.88 16.3	9 29.5	22 42.9	-11 41.6	-1.2723	.5172	.2078	-42	-81
B. A. C. 3407	6	2.89 16.4	8 52.6	23 36.1	-10 50.0	-0.7845	.5172	.2083	- 3	-81
π Leonis	5	2.89 16.6	8 36.6	13 0 41.9	- 9 46.1	-0.7278	.5171	.2091	0	-81
14 Sextantis	6	+2.89 -17.1	+ 6 11.2	4 10.3	- 6 23.8	+1.1896	.5170	-.2113	+90	+33
16 Sextantis	6	2.90 17.1	6 44.9	5 27.0	- 5 9.4	+0.3063	.5170	.2121	+57	-22
B. A. C. 3529	6	2.90 17.5	7 1.5	11 21.5	+ 0 34.8	-1.2566	.5171	.2155	-39	-83
Weisse X, 315	6½	2.92 17.9	4 31.9	14 19.3	+ 3 27.5	+0.8117	.5171	.2155	+90	+ 5
34 Sextantis	6	2.91 18.2	4 11.9	22 56.5	+11 49.6	-0.7136	.5177	.2206	+ 1	-86
36 Sextantis	6	+2.93 -18.5	+ 3 6.5	14 0 16.3	-10 52.9	+0.1741	.5178	-.2210	+49	-30
B. A. C. 3726	6	2.94 18.8	1 39.2	3 57.9	- 7 17.8	+0.9290	.5183	.2219	+90	+12
55 Leonis	6	2.94 18.9	1 21.9	5 46.4	- 5 32.4	+0.8377	.5185	.2223	+90	+ 6
p ² Leonis	6	2.95 18.9	0 38.1	9 53.9	- 1 32.2	+0.7058	.5191	.2233	+90	- 1
p ⁶ Leonis	5	2.95 19.0	+ 0 34.3	15 9.5	+ 3 34.1	-0.4049	.5201	.2240	+18	-64
B. A. C. 3901	6	+2.95 -19.2	- 1 3.1	22 27.4	+10 39.0	-0.2949	.5218	-.2244	+24	-56
B. A. C. 3903	6	2.94 19.1	0 14.9	22 32.1	+10 43.6	-1.1738	.5218	.2244	-30	-90
B. A. C. 3909	6	2.94 19.1	0 12.0	23 13.7	+11 24.0	-1.3826	.5220	.2244	-63	-90
c Leonis	5	2.96 19.2	2 21.2	23 41.9	+11 51.3	+0.8202	.5221	.2244	+88	+ 5
B. A. C. 3955	5½	2.95 19.2	1 47.0	15 3 50.7	- 8 7.3	-0.7171	.5230	.2241	+ 1	-90
B. A. C. 4006	6	+2.99 -19.2	- 4 40.7	10 16.9	- 1 52.7	+0.9408	.5251	-.2220	+86	+13
B. A. C. 4063	6½	2.96 19.1	4 49.3	16 37.6	+ 4 16.5	-0.3161	.5274	.2208	+22	-58
B. A. C. 4201	6½	2.98 18.6	8 1.3	16 4 45.4	- 7 58.1	+0.4358	.5323	.2158	+64	-16
γ Virginis	6	2.98 18.6	8 48.0	7 37.2	- 5 11.6	+0.6455	.5337	.2141	+79	- 5
Rumk. 4137	7	2.95 18.2	8 34.5	15 2.4	+ 1 59.6	-1.1633	.5372	.2091	-32	-90
B. A. C. 4312	6½	2.97 18.0	9 41.7	16 11.0	+ 3 6.1	-0.2172	.5377	.2083	+25	-52
ψ Virginis	5	+2.95 -18.0	- 8 53.8	17 37.2	+ 4 29.5	-1.3580	.5384	-.2071	-61	-90
i Virginis	5	2.94 16.6	12 5.6	17 8 57.4	- 4 40.0	-1.0551	.5466	.1927	-26	-90
75 Virginis	6	2.98 16.0	14 45.3	11 47.4	- 1 55.6	+1.1992	.5483	.1893	+75	+35
B. A. C. 4531	6	2.94 16.3	12 36.5	12 39.1	- 1 5.6	-1.2153	.5488	.1882	-41	-90
83 Virginis	6	2.97 15.4	15 35.1	17 8.4	+ 3 14.8	+1.0710	.5515	.1826	+75	+24
85 Virginis	6	+2.96 -15.4	-15 10.6	17 38.5	+ 3 43.8	+0.5483	.5518	-.1820	+66	- 9

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.

March.

STAR'S—				AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0. $\Delta\alpha$ $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	α'	γ'	N'n.	S'n.
B. A. C. 4700	5 $\frac{1}{2}$	+2.92 -14.4	-15 44.6	18 5 2.9	- 9 15.1	-0.8439	5588	-1657	-15 -90	
B. A. C. 4722	6	2.95 13.7	17 38.9	7 3.7	- 7 18.5	+0.8117	5600	.1626	+73 + 7	
B. A. C. 4739	6	2.95 13.5	18 10.0	8 29.0	- 5 56.2	+1.1218	5609	.1604	+72 +29	
μ Libræ	4 $\frac{1}{2}$	2.83 10.4	19 20.6	19 7 35.4	- 7 39.3	-0.9101	5744	.1191	-24 -90	
ν Libræ	6 $\frac{1}{2}$	2.83 10.4	19 12.0	8 3.4	- 7 12.3	-1.1110	5747	.1181	-40 -90	
O. Arg. S., 14428	6 $\frac{1}{2}$	+2.84 - 9.9	-20 17.1	9 56.2	- 5 23.7	-0.2086	5758	-1141	+15 -52	
Anonymous	6 $\frac{1}{2}$	2.80 8.4	21 43.9	18 5.7	+ 2 27.6	+0.4233	5800	.0968	+48 -15	
B. A. C. 5278	6	2.71 7.5	21 8.4	20 2 10.8	+10 14.3	-0.8939	5838	.0784	-28 -90	
δ Scorpii	2 $\frac{1}{2}$	2.70 6.9	22 17.0	3 25.7	+11 26.4	+0.1854	5843	.0753	+32 -99	
B. A. C. 5335	6 $\frac{1}{2}$	2.71 6.4	23 17.0	5 45.2	-10 19.5	+1.0430	5853	.0699	+67 +25	
B. A. C. 5354	6 $\frac{1}{2}$	+2.72 - 6.0	-23 22.1	6 48.7	- 9 18.4	+1.0575	5857	-.0675	+67 +27	
ρ Ophiuchi, <i>mult.</i>	5	2.64 5.1	23 10.3	13 36.3	- 2 46.5	+0.4531	5881	.0511	+46 -14	
B. A. C. 5571	7	2.58 3.8	24 14.2	19 59.3	+ 3 21.6	+1.2671	5901	.0376	+66 +58	
B. A. C. 5623	6 $\frac{1}{2}$	2.55 3.6	24 18.8	22 37.2	+ 5 53.4	+1.2612	5908	.0283	+66 +56	
22 Ophiuchi	6 $\frac{1}{2}$	2.50 3.5	23 19.0	21 1 16.1	+ 8 26.1	+0.1752	5914	.0217	+26 -30	
24 Ophiuchi	6 $\frac{1}{2}$	+2.49 - 3.5	-22 57.7	2 3.0	+ 9 11.1	-0.2044	5916	-.0196	+ 6 -52	
39 Ophiuchi, <i>mult.</i>	6	2.40 1.7	24 9.3	10 24.9	- 6 46.7	+0.9385	5931	+0.0020	+66 +17	
B. A. C. 5831	6	2.39 1.8	23 56.5	10 27.2	- 6 44.5	+0.7206	5931	.0020	+66 + 3	
B. A. C. 5862	7	2.37 1.7	23 43.8	12 48.3	- 4 29.0	+0.5178	5933	.0079	+47 -10	
B. A. C. 5868	6 $\frac{1}{2}$	2.37 1.6	24 8.0	13 12.5	- 4 5.8	+0.9317	5933	.0090	+66 +17	
δ Ophiuchi, <i>var.</i>	5	+2.35 - 1.4	-24 3.9	13 42.6	- 3 36.8	+0.8662	5934	+0.0103	+66 +12	
ϵ Ophiuchi	5	2.32 1.1	23 52.2	15 42.2	- 1 42.0	+0.6926	5936	.0154	+64 + 1	
52 Ophiuchi	7	2.27 1.7	21 57.8	17 16.8	- 0 11.1	-1.2215	5936	.0196	-60 -90	
B. A. C. 5989	7	2.25 0.6	23 37.4	20 46.9	+ 3 10.7	-0.5534	5936	.0286	+52 - 8	
B. A. C. 5992	6 $\frac{1}{2}$	2.22 1.0	22 8.4	20 51.3	+ 3 14.9	-0.9532	5936	.0289	-36 -90	
B. A. C. 6023	6 $\frac{1}{2}$	+2.23 - 0.1	-24 10.0	23 0.4	+ 5 18.9	+1.1760	5936	+0.0343	+66 +40	
4 Sagittarii	5	2.18 + 0.4	23 48.2	22 2 53.3	+ 9 2.5	+0.9590	5934	.0443	+66 +19	
B. A. C. 6088	6	2.15 0.1	22 46.6	3 44.6	+ 9 51.9	-0.0457	5933	.0467	+16 -42	
Lalande 33210	6 $\frac{1}{2}$	2.09 0.0	21 27.9	6 25.9	-11 33.2	-1.2428	5930	.0535	-62 -90	
B. A. C. 6161	6	2.11 0.9	23 43.4	7 35.9	-10 26.0	+1.1140	5929	.0563	+67 +32	
14 Sagittarii	6 $\frac{1}{2}$	+2.05 + 0.3	-21 44.6	8 38.9	- 9 25.4	-0.8356	5932	+0.0591	-26 -90	
B. A. C. 6222	6 $\frac{1}{2}$	2.04 1.1	22 58.5	11 42.0	- 6 29.6	+0.6057	5924	.0666	+58 - 5	
B. A. C. 6336	6 $\frac{1}{2}$	1.93 1.4	21 29.7	18 1.4	- 0 25.1	-0.4232	5913	.0825	0 -67	
B. A. C. 6347	6 $\frac{1}{2}$	1.92 1.4	21 9.0	18 25.8	- 0 1.6	-0.7384	5912	.0834	-18 -90	
28 Sagittarii	6	1.90 2.1	22 30.8	21 21.7	+ 2 47.4	+0.8972	5906	.0904	+68 +14	
O. Arg. S., 18672	6	+1.85 + 1.4	-20 24.1	22 1.0	+ 3 25.2	-1.1814	5904	+0.0921	-50 -90	
29 Sagittarii	6	1.83 1.6	20 27.5	22 43.9	+ 4 6.4	-1.0578	5902	.0937	-38 -90	
30 Sagittarii	6	1.87 2.3	22 17.8	23 9.9	+ 4 31.3	+0.8439	5901	.0947	+68 +10	
31 Sagittarii	6	1.86 2.2	22 3.5	23 41.1	+ 5 1.3	+0.6522	5899	.0959	+64 - 2	
33 Sagittarii	6	1.84 2.2	21 30.2	23 0 26.6	+ 5 45.0	+0.1636	5898	.0973	+33 -30	
ϵ Sagittarii	6	+1.81 + 2.0	-20 48.6	1 47.6	+ 7 2.8	-0.4039	5894	+1.008	+ 3 -65	
ζ Sagittarii	4	1.81 2.2	21 15.6	1 56.3	+ 7 11.2	+0.0672	5893	.1013	+28 -35	
η Sagittarii	4	1.79 2.8	21 54.8	4 42.7	+ 9 51.1	+1.0167	5885	.1076	+68 +22	
O. Arg. S., 19098	6	1.77 2.9	21 52.7	6 3.5	+11 8.8	+1.1285	5881	.1108	+68 +32	
B. A. C. 6536	6	1.73 2.0	19 28.5	6 12.8	+11 17.8	-1.2853	5880	.1110	-63 -90	
B. A. C. 6539	6	+1.74 + 2.6	-21 10.3	6 17.6	+11 22.4	+0.4400	5880	+1.112	+51 -15	
π Sagittarii	3	1.75 2.8	21 12.6	6 46.5	+11 50.2	+0.5327	5878	.1124	+57 - 9	
δ Sagittarii	5	1.66 2.3	19 9.7	9 59.6	- 9 4.2	-1.1641	5867	.1195	-45 -90	
B. A. C. 6658	6	1.61 2.5	18 35.8	14 14.5	- 4 59.1	-1.2061	5852	.1289	-48 -90	
Lalande 36857	6 $\frac{1}{2}$	1.61 3.0	19 38.0	15 41.7	- 3 35.3	+0.0300	5847	.1319	+29 -38	
f Sagittarii	5	1.54 3.8	20 2.7	21 41.4	+ 2 10.8	+1.2732	5823	.1443	+70 +50	
57 Sagittarii	5 $\frac{1}{2}$	+1.49 + 3.7	-19 20.7	24 0 6.0	+ 4 30.0	+0.9198	5813	+1.490	+71 +14	
B. A. C. 7063	6	1.25 3.8	15 27.1	16 23.9	- 3 48.6	-0.3258	5746	.1786	+15 -59	
γ^1 Capricorni	6	1.22 4.0	15 33.4	19 3.1	- 1 15.2	+0.2599	5734	.1829	+47 -25	
γ^2 Capricorni	5	1.21 4.0	15 22.2	19 52.3	- 0 27.8	+0.2225	5731	.1842	+45 -27	
B. A. C. 7221	6 $\frac{1}{2}$	1.14 3.6	12 59.0	25 0 46.8	+ 4 15.9	-1.2592	5708	.1915	-47 -90	
8 Aquarii	6	+1.10 + 4.0	-13 30.6	4 44.5	+ 8 5.0	+0.0408	5691	+1.971	+36 -37	

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

March.

STAR'S—				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0. $\Delta\alpha$ $\Delta\delta$		Apparent Declination.	Washington Mean Time.	Hour Angle <i>H</i>	<i>Y</i>	α'	<i>y'</i>	N'n.	S'n.
9 Aquarii	6	+1.09	+4.2	-13° 59.5	^d 25 ^h 5 ^m 15.6	+ 8 35.0	+0.6287	.5689	+1978	+73	- 5
ν Aquarii	4½	1.05	3.8	11 51.1	8 56.6	-11 51.9	-0.7896	.5673	.2026	- 8	-90
19 Aquarii	6	0.96	3.7	10 15.1	15 47.0	- 5 16.1	-0.9874	.5644	.2106	-20	-90
Yarnall 9373	6½	0.97	4.2	12 4.9	17 4.9	- 4 0.9	+1.1306	.5639	.2119	+78	+28
B. A. C. 7562	6½	0.89	3.9	9 34.9	^d 26 ^h 0 ^m 28.6	+ 3 7.2	+0.2068	.5611	.2192	+49	-28
ϵ^1 Capricorni	6	+0.89	+3.9	- 9 37.6	0 30.9	+ 3 9.4	+0.2608	.5611	+2193	+52	-25
ϵ^2 Capricorni	6½	0.88	3.9	9 49.4	1 4.5	+ 3 41.9	+0.5813	.5609	.2198	+73	- 8
30 Aquarii	5½	0.81	3.6	7 5.8	8 41.1	+11 2.7	-0.4721	.5583	.2258	+13	-69
B. A. C. 7744	6	0.77	3.4	5 18.4	12 57.5	- 8 49.7	-1.3077	.5571	.2286	-47	-90
44 Aquarii	6	0.76	3.6	5 58.8	14 55.2	- 6 56.1	-0.1780	.5565	.2297	+29	-49
51 Aquarii	6	+0.74	+3.6	- 5 26.3	18 5.3	- 3 52.5	+0.0051	.5557	+2313	+40	-39
κ Aquarii	5	0.68	3.6	4 50.4	^d 27 ^h 0 ^m 17.6	+ 2 7.1	+0.8459	.5542	.2338	+85	+ 6
3 Piscium	6	0.64	3.3	- 0 27.1	10 46.1	-11 45.6	-1.1458	.5523	.2361	-28	-90
κ Piscium	4½	0.58	3.4	+ 0 36.3	22 52.1	- 0 3.9	+0.6511	.5507	.2356	+84	- 4
η Piscium	3½	0.60	3.8	14 44.0	^d 30 ^h 8 ^m 12.4	+ 7 21.5	-1.3329	.5532	.1907	-57	-76
27 Arietis	6	+0.74	+3.6	+17 10.7	^d 31 ^h 11 ^m 5.9	+ 9 20.3	+0.6937	.5565	+1490	+90	+ 8
B. A. C. 782	6½	0.75	3.8	18 21.4	12 17.6	+10 29.5	-0.3724	.5566	.1470	+19	-50
μ Arietis	5½	0.79	3.9	19 30.3	16 12.8	- 9 43.5	-1.0268	.5572	.1398	-22	-71
40 Arietis	6	0.79	3.5	17 47.5	19 0.3	- 7 1.6	+1.1722	.5575	.1349	+90	+44
47 Arietis	6	+0.85	+3.8	+20 11.5	23 14.1	- 2 56.5	-0.8198	.5578	+1269	- 8	-70

April.

δ Arietis	4½	+0.89	+3.5	+19 16.6	^d 1 ^h 5 ^m 18.6	+ 2 55.4	+0.8890	.5581	+1154	+90 +23
ζ Arietis	4½	0.91	3.7	20 36.2	6 45.6	+ 4 19.4	-0.3595	.5582	.1125	+19 -46
B. A. C. 1032	6½	0.93	3.4	20 4.7	9 25.6	+ 6 53.9	+0.4941	.5583	.1072	+72 + 1
τ^1 Arietis	5	0.93	3.5	20 43.1	9 34.7	+ 7 2.6	-0.1729	.5583	.1070	+29 -35
τ^2 Arietis	6	+0.94	+3.4	+20 19.0	10 16.2	+ 7 42.7	+0.3278	.5583	+1056	+60 - 8
65 Arietis	6	0.95	3.4	20 22.8	11 0.5	+ 8 25.5	+0.3386	.5584	.1042	+60 - 7
B. A. C. 1143	6	1.02	3.1	20 33.0	19 56.7	- 5 38.0	+1.0086	.5584	.0859	+90 +35
32 Tauri	6	1.09	3.2	22 8.1	^d 2 ^h 1 26.5	- 1 38.4	-0.2508	.5584	.0746	+25 -36
33 Tauri	6	1.10	3.3	22 49.8	1 31.1	- 1 33.9	-0.9922	.5584	.0744	-21 -67
A ¹ Tauri	4½	+1.12	+2.9	+21 45.4	4 56.3	+ 1 44.2	+0.4060	.5582	+0.673	+66 0
A ² Tauri	6	1.13	2.8	21 41.3	5 13.2	+ 2 0.5	+0.4979	.5582	.0666	+73 + 5
B. A. C. 1281	6	1.16	2.8	22 6.5	8 34.7	+ 5 15.1	+0.2572	.5580	.0598	+55 - 7
56 Tauri	6½	1.19	2.4	21 29.1	11 36.5	+ 8 10.6	+1.1026	.5577	.0534	+90 +45
κ^1 Tauri	5½	1.23	2.4	22 1.3	14 9.7	+10 38.5	+0.6537	.5575	.0480	+90 +16
κ^2 Tauri	6½	+1.23	+2.4	+21 55.7	14 11.3	+10 40.1	+0.7556	.5575	+0.480	+90 +22
ν^1 Tauri	4½	1.23	2.6	22 32.6	14 34.4	+11 2.3	+0.1082	.5574	.0471	+46 -13
ν^2 Tauri	6	1.24	2.6	22 43.6	15 1.3	+11 28.3	-0.0692	.5574	.0461	+35 -23
Rumk. 1250	6½	1.31	2.2	22 42.8	21 41.7	- 6 5.1	+0.2051	.5566	.0321	+52 - 7
τ Tauri	4½	1.31	2.2	22 43.7	21 42.9	- 6 3.9	+0.1903	.5566	.0319	+51 - 8
90 Tauri	6½	+1.40	+2.1	+23 45.7	^d 3 ^h 4 ^m 41.4	+ 0 40.2	-0.7643	.5553	+0.171	- 5 -66
103 Tauri	6	1.45	1.7	24 6.4	9 19.6	+ 5 8.9	-1.0857	.5544	+0.072	-30 -66
π Tauri	6	1.49	0.7	21 58.4	14 26.2	+10 4.9	+1.2552	.5532	-0.035	+90 +66
121 Tauri	6	1.59	0.8	23 57.5	21 45.3	- 6 50.7	-0.9991	.5513	.0187	-22 -66
B. A. C. 1774	6½	1.60	0.4	23 15.2	23 30.5	- 5 9.0	-0.2621	.5509	.0220	+24 -32
B. A. C. 1801	6	+1.62	+0.2	+23 8.8	^d 4 ^h 1 22.6	- 3 20.6	-0.1904	.5504	-0.259	+28 -27
141 Tauri	6	1.73	-0.9	22 23.8	9 51.7	+ 4 51.5	+0.3414	.5497	.0431	+61 - 1
1 Geminorum	5	1.75	0.7	23 16.1	10 57.8	+ 5 55.3	-0.6663	.5477	.0453	+ 1 -63
2 Geminorum	6½	1.76	0.6	23 38.9	12 12.1	+ 7 7.2	-1.1416	.5469	.0478	-35 -67
B. A. C. 1970	6½	1.76	1.3	22 12.5	13 30.3	+ 8 22.8	+0.3775	.5465	.0502	+63 + 1
3 Geminorum	6	+1.76	-1.3	+23 7.8	13 34.4	+ 8 26.8	-0.6406	.5465	-0.054	+ 2 -61
6 Geminorum	6	1.79	1.1	22 56.0	14 46.8	+ 9 36.8	-0.4855	.5460	.0527	+12 -49
η Geminorum	3½	1.79	1.4	22 32.4	15 59.3	+10 46.9	-0.1171	.5455	.0550	+33 -27
B. A. C. 2039	6½	1.81	2.1	21 15.1	19 3.0	-10 15.5	+1.1241	.5444	.0610	+90 +46
μ Geminorum	3	+1.84	-1.8	+22 34.4	19 45.6	- 9 34.3	-0.3753	.5442	-0.613	+18 -43

**ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.**

April.

STAR'S—				AT CONJUNCTION IN R. A.					Limiting Parallels	
Name.	Mag.	Red'ns from 1881.0. Δα Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N'n.	S'n.
<i>d</i> Geminorum	6	+1.97 - 3.4	+21° 54.0	^d 9 18.3	+ 3 31.9	-0.6489	.5415	-.0872	+ 2	-64
ζ Geminor., <i>mult.</i>	4	2.02 4.3	20 44.5	15 21.2	+ 9 23.2	+0.0694	.5371	.0979	+43	-21
56 Geminorum	5½	2.11 5.3	20 40.0	6 0 0.2	- 6 14.3	-0.7566	.5338	.1127	- 4	-69
61 Geminorum	6	2.13 5.5	20 29.5	2 26.2	- 3 53.0	-0.8429	.5329	.1164	- 9	-70
<i>f</i> Geminorum	6	2.16 7.1	17 56.5	8 39.3	+ 2 8.6	+1.2232	.5307	.1261	+90	+50
<i>g</i> Geminorum	5½	+2.20 - 7.1	+18 47.8	11 55.6	+ 5 18.7	-0.1422	.5295	-.1311	+31	-36
3 Cancri	6	2.26 8.2	17 37.9	19 15.0	-11 35.4	+0.1477	.5270	.1418	+48	-22
5 Cancri	6	2.25 8.4	16 46.8	19 37.6	-11 13.5	+1.0349	.5268	.1423	+90	+30
B. A. C. 2731	6½	2.27 8.7	17 21.7	23 53.1	- 7 5.8	-0.2269	.5255	.1483	+27	-43
♂ Cancri	4½	2.32 8.6	18 0.2	7 0 58.4	- 6 2.4	-1.0975	.5252	.1497	-27	-72
♂ Cancri	7½	+2.32 - 8.6	+18 0.0	0 58.6	- 6 2.2	-1.0940	.5252	-.1497	-27	-72
B. A. C. 3031	6½	2.46 11.7	14 37.9	23 13.4	- 8 27.4	-1.0155	.5194	.1769	-20	-76
α Cancri	4	2.44 12.7	12 18.8	8 0 43.6	- 6 59.8	+1.2715	.5191	.1785	+90	+48
B. A. C. 3132	6	2.50 13.1	12 2.7	6 35.2	- 1 18.7	+0.5036	.5180	.1844	+71	- 8
λ Leonis	6	2.57 14.6	10 14.1	18 10.8	+ 9 56.5	+0.2870	.5161	.1951	+56	-21
ο Leonis	3½	+2.60 -14.9	+10 25.7	22 59.0	- 9 22.8	-0.8750	.5156	-.1991	- 9	-80
Weisse IX, 1035	7	2.64 16.0	8 14.2	9 6 46.0	- 1 50.2	-0.0470	.5153	.2049	+37	-40
B. A. C. 3407	6	2.65 15.8	8 52.6	7 55.0	- 0 43.3	-0.9808	.5153	.2058	-16	-81
π Leonis	5	2.66 15.9	8 36.6	9 1.7	+ 0 21.5	-0.9162	.5153	.2065	-12	-82
14 Sextantis	6	2.66 16.7	6 11.2	12 30.3	+ 3 44.1	+1.0021	.5153	.2087	+90	+19
16 Sextantis	6	+2.68 -16.6	+ 6 44.9	13 47.2	+ 4 58.7	+0.1211	.5153	-.2094	+47	-31
Weisse X, 315	6½	2.73 17.6	4 31.9	22 41.0	-10 22.9	+0.6448	.5159	.2143	+84	- 4
31 Sextantis	6	2.78 18.2	4 11.9	10 7 19.0	- 2 0.1	-0.8606	.5170	.2183	- 8	-86
36 Sextantis	6	2.79 18.4	3 6.6	8 38.8	- 0 42.6	+0.0276	.5172	.2185	+41	-38
B. A. C. 3726	6	2.80 18.9	1 39.2	12 20.4	+ 2 52.5	+0.7916	.5179	.2196	+90	+ 4
55 Leonis	6	+2.82 -19.0	+ 1 21.9	14 8.8	+ 4 37.8	+0.7045	.5183	-.2201	+90	- 1
<i>p</i> Leonis	6	2.84 19.3	0 38.1	18 16.0	+ 8 37.6	+0.5825	.5192	.2210	+77	- 8
<i>p</i> Leonis	5	2.86 19.4	+ 0 34.3	23 30.8	-10 16.8	-0.5136	.5205	.2219	+12	-72
B. A. C. 3901	6	2.90 19.8	- 1 3.1	11 6 47.1	- 3 13.4	-0.3868	.5228	.2223	+19	-62
B. A. C. 3903	6	2.90 19.7	0 15.0	6 51.8	- 3 8.8	-1.2627	.5228	.2223	-39	-90
ε Leonis	5	+2.90 -20.1	- 2 21.2	8 1.2	- 2 1.5	+0.7313	.5232	-.2223	+85	0
B. A. C. 3955	5½	2.92 20.0	1 47.0	12 8.8	+ 1 58.6	-0.7937	.5246	.2221	- 4	-90
B. A. C. 4006	6	2.96 20.4	4 40.7	18 32.3	+ 8 10.6	+0.8744	.5272	.2212	+86	+ 9
B. A. C. 4063	6½	3.00 20.3	4 49.3	12 0 49.9	- 9 43.4	-0.3613	.5299	.2196	+19	-61
B. A. C. 4201	6½	3.08 20.5	8 1.4	12 50.0	+ 1 54.4	+0.4167	.5357	.2146	+62	-17
ρ Virginis	6	+3.10 -20.4	- 8 48.1	15 39.8	+ 4 38.8	+0.6324	.5367	-.2131	+78	- 5
Rumk. 4137	7	3.14 19.9	8 34.5	22 58.7	+11 43.7	-1.1466	.5413	.2082	-31	-90
B. A. C. 4312	6½	3.15 20.0	9 41.7	13 0 6.2	-11 10.9	-0.2038	.5420	.2074	+26	-51
ψ Virginis	5	3.15 19.7	8 53.9	1 31.2	- 9 48.7	-1.3326	.5429	.2063	-55	-90
ι Virginis	5	3.24 18.8	12 5.6	16 36.0	+ 4 46.3	-0.9947	.5525	.1921	-22	-90
75 Virginis	6	+3.27 -18.6	-14 45.4	19 22.8	+ 7 27.4	+1.2480	.5543	-.1889	+76	+41
B. A. C. 4531	6	3.26 18.5	12 36.6	20 13.4	+ 8 16.4	-1.1442	.5549	.1879	-34	-90
83 Virginis	6	3.30 18.1	15 35.1	14 0 37.5	-11 28.5	+1.1329	.5579	.1825	+75	+30
85 Virginis	6	3.30 18.0	15 10.6	1 7.3	-10 59.7	+0.6181	.5582	.1818	+71	- 5
B. A. C. 4700	5½	3.34 16.8	15 44.6	12 17.4	- 0 12.9	-0.7398	.5657	.1660	- 9	-90
B. A. C. 4722	6	+3.37 -16.3	-17 39.0	14 15.6	+ 1 41.1	+0.9047	.5671	-.1629	+73	+13
B. A. C. 4739	6	3.37 16.2	18 10.1	15 39.1	+ 3 1.6	+1.2145	.5680	.1606	+72	+40
λ Libræ	4½	3.40 12.7	19 20.6	15 14 14.9	+ 0 47.7	-0.7548	.5823	.1187	-15	-90
ε Libræ	6½	3.39 12.7	19 12.1	14 42.2	+ 1 14.0	-0.9534	.5826	.1179	-28	-90
O. Arg. S., 14428	6½	3.41 12.2	23 17.2	16 32.5	+ 3 0.1	-0.0560	.5839	.1138	+22	-42
Anonymous	6½	3.42 10.5	21 44.0	16 0 31.2	+10 40.6	+0.5831	.5879	.0962	+54	- 5
B. A. C. 5278	6	+3.37 - 9.2	-21 8.4	8 26.1	- 5 42.9	-0.7102	.5914	-.0777	-17	-90
B. A. C. 5281	6	3.36 9.2	20 38.4	8 37.7	- 5 31.7	-1.2362	.5915	.0772	-60	-90
δ Scorpii	2½	3.39 8.7	22 17.0	9 39.5	- 4 32.4	+0.3608	.5916	.0748	+42	-19
B. A. C. 5335	6½	3.41 8.0	23 17.0	11 56.1	- 2 21.1	+1.2142	.5927	.0692	+67	+45
B. A. C. 5354	6½	3.41 7.8	23 22.1	12 58.4	- 1 21.1	+1.2303	.5930	.0668	+67	+47
B. A. C. 5395	6	+3.34 - 8.0	-21 5.8	14 58.8	+ 0 34.5	-1.2100	.5938	-.0618	-56	-90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

April.

STAR'S—				AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0. $\Delta\alpha$ $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	α'	γ'	N'n.	S'n.
ρ Ophiuchi, <i>mult.</i>	5	+3.37	-6.6	-23 10.4	16 19 38.0	+ 5 2.7	+0.6403	.5952	-.0501	+60 - 3
22 Ophiuchi	6 $\frac{1}{2}$	3.27	4.3	23 19.0	17 7 5.4	- 7 57.3	+0.3779	.5977	.0209	+39 -19
24 Ophiuchi	6 $\frac{1}{2}$	3.26	4.3	22 57.7	7 51.5	- 7 13.1	+0.0023	.5978	-.0188	+17 -30
39 Ophiuchi, <i>mult.</i>	6	3.22	2.4	24 9.3	16 6.0	+ 0 41.7	+1.1460	.5984	+0.0028	+66 +37
B. A. C. 5831	6	3.21	2.4	23 56.5	16 8.2	+ 0 43.8	+0.9296	.5984	.0030	+66 +17
B. A. C. 5862	7	+3.18	-2.1	-23 43.9	18 27.5	+ 2 57.5	+0.7304	.5985	+0.0091	+67 + 3
B. A. C. 5868	6 $\frac{1}{2}$	3.19	1.9	24 8.0	18 51.3	+ 3 20.3	+1.1421	.5985	.0101	+66 +36
δ Ophiuchi, <i>var.</i>	5	3.17	1.2	24 3.9	19 21.1	+ 3 48.9	+1.0777	.5985	-.0114	+66 +29
ϵ Ophiuchi	5	3.15	1.4	23 52.2	21 19.1	+ 5 42.2	+0.9070	.5985	.0166	+66 +15
52 Ophiuchi	7	3.10	1.8	21 57.8	22 52.5	+ 7 11.9	-0.9947	.5983	.0206	-40 -90
B. A. C. 5954	6	+3.08	-1.7	-21 50.5	18 0 13.1	+ 8 29.3	-1.0884	.5983	+0.0242	-47 -90
58 Ophiuchi	5	3.05	1.3	21 37.4	2 3.1	+10 14.9	-1.2508	.5981	.0289	-65 -90
B. A. C. 5989	7	3.10	0.6	23 37.4	2 23.3	+10 31.4	+0.7732	.5980	.0297	+67 + 6
D. A. C. 5992	6 $\frac{1}{2}$	3.06	-1.0	22 8.4	2 24.6	+10 35.5	-0.7258	.5981	.0298	-22 -90
4 Sagittarii	5	3.03	+0.6	23 48.2	8 23.1	- 7 40.4	+1.1825	.5971	.0453	+66 +41
B. A. C. 6088	6	+3.00	+0.5	-22 46.6	9 14.0	- 6 51.3	+0.1822	.5970	+0.0476	-29 -20
B. A. C. 6125	7	2.95	0.4	21 27.3	11 19.8	- 4 50.6	-1.0498	.5965	.0520	-41 -90
Lalande 33210	6 $\frac{1}{2}$	2.95	0.4	21 27.9	11 54.0	- 4 17.8	-1.0090	.5964	.0542	-38 -90
μ Sagittarii	4	2.89	0.8	21 5.3	13 55.0	- 2 21.6	-1.2753	.5964	.0595	-67 -90
14 Sagittarii	6 $\frac{1}{2}$	2.92	1.0	21 44.6	14 6.1	- 2 10.9	-0.6020	.5959	.0597	-12 -84
B. A. C. 6222	6 $\frac{1}{2}$	+2.91	+1.9	-22 58.5	17 8.1	+ 0 43.9	+0.8366	.5961	+0.0675	+67 +10
B. A. C. 6336	6 $\frac{1}{2}$	2.80	2.6	21 29.7	23 25.8	+ 6 46.7	-0.1868	.5932	.0829	+12 -51
B. A. C. 6347	6 $\frac{1}{2}$	2.79	2.4	21 9.0	23 50.0	+ 7 10.0	-0.5014	.5931	.0839	- 4 -73
28 Sagittarii	6	2.78	3.4	22 30.8	19 24.6	+ 9 58.6	+1.1329	.5920	.0909	+68 +34
O. Arg. S., 18672	6	2.73	2.8	20 24.1	3 24.8	+10 36.2	-0.9428	.5918	.0923	-30 -90
29 Sagittarii	6	+2.72	+2.9	-20 27.5	4 7.7	+11 17.4	-0.8193	.5914	+0.0942	-22 -90
30 Sagittarii	6	2.75	3.7	22 17.8	4 33.5	+11 42.3	+1.0804	.5913	.0952	+68 +28
31 Sagittarii	6	2.74	3.6	22 3.5	5 4.8	-11 47.6	+0.8886	.5911	.0963	+68 +13
33 Sagittarii	6	2.72	3.6	21 30.2	5 50.2	-11 4.0	+0.4014	.5907	.0982	+47 -17
ϵ Sagittarii	6	2.67	3.6	20 45.6	7 11.2	- 9 46.2	-0.1652	.5902	.1012	+15 -49
ζ Sagittarii	4	+2.67	+3.8	-21 15.6	7 19.9	- 9 37.8	+0.3056	.5901	+1.017	+41 -22
σ Sagittarii	4	2.65	4.5	21 54.8	10 6.3	- 6 57.9	+1.2560	.5889	.1078	+68 +50
B. A. C. 6536	6	2.58	3.8	19 28.4	11 36.5	- 5 31.1	-1.0462	.5882	.1111	-36 -90
B. A. C. 6539	6	2.61	4.5	21 10.3	11 41.4	- 5 26.4	+0.6798	.5882	.1114	+67 - 1
π Sagittarii	3	2.61	4.6	21 12.6	12 10.3	- 4 58.6	+0.7725	.5879	.1125	+69 + 5
δ Sagittarii	5	+2.52	+4.3	-19 9.7	15 23.9	- 1 52.5	-0.9251	.5864	+1.194	-26 -90
B. A. C. 6658	6	2.47	4.8	18 35.8	19 39.7	+ 2 13.5	-0.9674	.5843	.1226	-28 -90
Lalande 36857	6 $\frac{1}{2}$	2.45	5.3	19 38.0	21 7.3	+ 3 37.7	+0.2709	.5836	.1317	+42 -24
57 Sagittarii	5 $\frac{1}{2}$	2.34	6.4	19 20.6	20 5 34.9	+11 46.2	-1.1639	.5793	.1484	+71 +35
B. A. C. 6992	6 $\frac{1}{2}$	2.10	6.1	15 9.4	17 40.0	- 0 35.5	-1.1505	.5726	.1697	-38 -90
β Capricorni	3	+2.10	+6.1	-15 9.2	17 45.9	- 0 29.9	-1.1368	.5726	+1.698	-37 -90
B. A. C. 7063	6	2.04	6.8	15 27.0	22 3.7	+ 3 38.6	-0.0026	.5703	.1766	+27 -44
B. A. C. 7087	6	2.01	6.4	14 7.6	23 24.9	+ 4 56.8	-1.1923	.5695	.1787	-41 -90
γ Capricorni	6	2.00	7.0	15 33.4	21 0 45.1	+ 6 14.2	+0.4952	.5689	.1807	+62 -12
γ^2 Capricorni	5	1.99	7.1	15 22.1	1 35.1	+ 7 2.4	+0.4571	.5684	.1818	+59 -14
B. A. C. 7221	6 $\frac{1}{2}$	+1.90	+6.8	-12 58.9	6 34.2	+11 50.7	-1.0378	.5659	+1.889	-26 -90
8 Aquarii	6	1.85	7.2	13 30.6	10 35.9	- 8 16.1	+0.2681	.5638	.1942	+49 -24
9 Aquarii	6	1.84	7.3	13 59.5	11 7.6	- 7 45.5	+0.8594	.5635	.1949	+76 + 9
ν Aquarii	4 $\frac{1}{2}$	1.79	6.9	11 51.0	14 52.7	- 4 8.3	-0.5727	.5617	.1994	+ 4 -77
19 Aquarii	6	1.69	7.6	10 15.1	21 51.0	+ 2 35.3	-0.7789	.5584	.2075	- 7 -90
Yarnall 9373	6 $\frac{1}{2}$	1.68	7.0	12 4.9	23 10.5	+ 3 52.2	+1.3555	.5578	.2083	+78 +62
B. A. C. 7569	6 $\frac{1}{2}$	+1.57	+7.4	- 9 34.9	22 6 43.7	+11 9.8	+0.4152	.5546	+2.153	+62 -17
ϵ Capricorni	6	1.57	7.4	9 37.6	6 46.1	+11 12.1	+0.4700	.5546	.2153	+65 -14
ϵ^2 Capricorni	6 $\frac{1}{2}$	1.56	7.3	9 49.3	7 20.4	+11 45.3	+0.7927	.5544	.2158	+80 + 4
30 Aquarii	5 $\frac{1}{2}$	1.46	6.9	7 5.7	15 7.4	- 4 43.6	-0.2813	.5516	.2214	+23 -55
B. A. C. 7744	6	1.39	6.6	5 18.3	19 29.8	- 0 30.1	-1.1321	.5502	.2240	-28 -90
44 Aquarii	6	+1.38	+6.8	- 5 58.7	21 30.3	+ 1 26.5	+0.0062	.5496	+2.251	+38 -39

**ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.**

April.

STAR'S—					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N'n.	S'n.
		$\Delta\alpha$	$\Delta\delta$		$\begin{smallmatrix} d & h & m \\ \hline \end{smallmatrix}$	$\begin{smallmatrix} h & m \\ \hline \end{smallmatrix}$					
51 Aquarii	6	+1.34	+6.9	-5 26.2	23 0 45.0	+4 34.8	+0.1860	.5437	+2267	+49	-20
κ Aquarii	5	1.28	6.7	4 50.4	7 6.3	+10 43.4	+1.0252	.5473	.2290	+85	+19
3 Piscium	6	1.16	5.9	-0 27.1	17 50.2	-2 53.8	-0.9945	.5451	.2303	-17	-90
κ Piscium	4.4	1.06	5.9	+0 36.3	24 6 13.6	+9 5.3	+0.7841	.5440	.2306	+90	+3
9 Piscium	6	1.06	5.9	0 28.2	6 22.7	+9 14.0	+0.9576	.5440	.2306	+90	+14
Yarnall 10387	7	+1.04	+5.7	+1 42.6	8 12.2	+11 0.0	+0.1040	.5439	+2303	+45	-33
16 Piscium	6	1.02	5.8	1 26.6	10 42.6	-10 34.5	+0.9545	.5439	.2296	+90	+14
19 Piscium	6	0.99	5.6	2 49.7	15 26.1	-6 0.2	+0.6127	.5439	.2281	+80	-6
36 Piscium	6	0.91	4.7	7 34.9	25 5 40.8	+7 46.6	-1.0919	.5447	.2212	-24	-83
d Piscium	5.4	0.89	4.8	7 31.9	7 34.7	+9 36.8	-0.6217	.5449	.2199	+6	-79
45 Piscium	6	+0.88	+4.9	+7 2.1	9 58.6	+11 56.0	+0.4180	.5452	+2182	+64	-15
32 Tauri	6	0.94	2.0	22 8.1	29 10 2.7	+8 45.6	-0.3774	.5613	.0735	+18	-44
33 Tauri	6	0.95	2.1	22 49.8	10 7.3	+8 50.0	-1.1192	.5613	.0732	-33	-67
A ¹ Tauri	4.4	0.96	1.7	21 45.3	13 31.7	-11 52.6	+0.2743	.5613	.0661	+56	-7
A ² Tauri	6	0.96	1.7	21 41.3	13 48.5	-11 36.4	+0.3661	.5613	.0657	+62	-2
B. A. C. 1281	6	+0.98	+1.6	+22 6.5	17 9.0	-8 22.8	+0.1205	.5612	+0586	+46	-14
51 Tauri	7	0.98	1.3	21 17.3	19 37.2	-5 59.8	+1.1447	.5611	.0533	+90	+49
56 Tauri	6.4	0.99	1.2	21 29.1	20 9.9	-5 28.2	+0.9609	.5610	.0522	+90	+35
κ^1 Tauri	5.4	1.02	0.9	22 1.2	22 42.3	-3 1.1	+0.5084	.5608	.0469	+74	+8
κ^2 Tauri	6.4	+1.02	+0.9	+21 55.7	22 43.9	-2 59.5	+0.6103	.5608	+0467	+85	+14
ν^1 Tauri	4.4	1.02	1.3	22 32.6	23 6.8	-2 37.5	-0.0373	.5608	.0458	+37	-21
ν^2 Tauri	6	1.02	1.2	22 43.6	23 33.5	-2 11.7	-0.2153	.5607	.0450	+27	-31
Rumk. 1250	6.4	1.06	0.9	22 42.8	30 6 11.6	+4 12.7	+0.0500	.5600	.0305	+42	-15
τ Tauri	4.4	+1.06	+0.9	+22 43.6	6 12.7	+4 13.8	+0.0350	.5600	+0305	+41	-16
99 Tauri	6.4	1.14	0.8	23 45.7	13 8.5	+10 55.2	-0.9273	.5588	.0160	-17	-67
103 Tauri	6	1.17	+0.6	24 6.4	17 44.9	-8 37.9	-1.2534	.5579	+0062	-55	-66
π Tauri	6	+1.19	-0.4	+21 58.4	22 49.3	-3 43.9	+1.0993	.5568	-0046	+90	+48

May.

σ Tauri	6	+1.22	-0.7	+21 50.0	1 2 36.0	-0 5.0	+1.1981	.5559	-0124	+90	+58
121 Tauri	6	1.26	0.3	23 57.5	6 5.3	+3 17.1	-1.1806	.5549	-0196	-41	-66
B. A. C. 1774	6.4	1.28	0.5	23 15.2	7 49.9	+4 58.2	-0.4465	.5544	.0234	+14	-43
B. A. C. 1801	6	1.28	0.7	23 8.8	9 41.2	+6 45.7	-0.3771	.5539	.0271	+17	-39
141 Tauri	6	1.34	1.5	22 23.7	18 7.0	-9 5.5	+0.1457	.5508	.0442	+48	-11
1 Geminorum	5	+1.36	-1.4	+23 16.1	19 12.7	-8 2.0	-0.8612	.5504	-0462	-12	-67
B. A. C. 1970	6.4	1.37	1.9	22 12.5	21 44.2	-5 35.6	+0.1788	.5494	.0513	+50	-10
3 Geminorum	6	1.38	1.7	23 7.8	21 48.4	-5 31.5	-0.8379	.5494	.0514	-10	-67
6 Geminorum	6	1.39	1.8	22 56.0	23 0.3	-4 22.0	-0.6837	.5490	.0536	0	-65
η Geminorum	3.4	1.39	2.0	22 32.4	2 0 12.4	-3 12.3	-0.3173	.5486	.0359	+21	-38
B. A. C. 2039	6.4	+1.41	-2.7	+21 15.1	3 15.0	-0 15.8	+0.9198	.5474	-0619	+90	+31
μ Geminorum	3	1.43	2.3	22 34.3	3 57.4	+0 25.2	-0.5780	.5472	.0633	+6	-57
15 Geminor., mult.	6	1.43	3.0	20 51.6	6 15.2	+2 38.5	+1.1556	.5463	.0677	+90	+49
d Geminorum	6	1.55	3.5	21 54.0	17 26.3	-10 32.2	-0.8616	.5418	.0783	-11	-68
ζ Geminor., mult.	4	1.59	4.2	20 44.5	23 28.0	-4 42.2	-0.1472	.5391	.0987	+31	-33
56 Geminorum	5.4	+1.67	-5.1	+20 40.0	3 8 5.7	+3 39.0	-0.9772	.5353	-1128	-19	-70
61 Geminorum	6	1.69	5.3	20 29.5	10 31.7	+6 0.4	-1.0651	.5342	-1168	-26	-70
f Geminorum	6	1.72	6.6	17 56.5	16 44.6	-11 58.3	+0.9998	.5316	-1264	+90	+29
g Geminorum	5.4	1.76	6.5	18 47.8	20 1.0	-8 48.1	-0.3676	.5302	-1313	+19	-49
3 Cancri	6	1.82	7.4	17 37.9	4 3 21.0	-1 41.6	-0.0790	.5272	-1417	+35	-34
5 Cancri	6	1.81	7.7	16 46.8	3 43.7	-1 19.6	+0.8087	.5270	-1423	+90	+15
B. A. C. 2731	6.4	+1.84	-8.3	+17 21.7	7 59.9	+2 48.8	-0.4543	.5254	-1480	+14	-57
29 Cancri	6	1.91	9.5	14 36.0	17 30.8	-11 57.5	+1.1345	.5278	-1634	+90	+36
B. A. C. 3031	6.4	2.04	10.6	14 37.9	5 7 27.2	+1 34.1	-1.2439	.5172	-1757	-41	-76
α Cancri	4	2.03	11.5	12 18.9	8 58.1	+3 2.4	+1.0491	.5168	-1773	+90	+26
B. A. C. 3122	6.4	2.09	12.0	12 2.7	14 52.4	+8 46.4	+0.2832	.5155	-1831	+56	-20
ω Leonis	6	+2.16	-13.4	+9 34.2	6 0 43.8	-5 39.4	+1.1585	.5137	-1919	+90	+33

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

May.

STAR'S—					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	π'	y'	N'n.	S'n.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
α Leonis	6	+2.18	-13.3	+10 14.1	6 2 34.3	- 3 52.1	+0.0700	.5135	-.1931	+43	-32
\circ Leonis	3 $\frac{1}{2}$	2.23	13.6	10 25.8	7 26.3	+ 0 51.5	-1.0927	.5128	.1973	-25	-80
Weisse IX, 1035	7	2.28	14.7	8 14.3	15 17.4	+ 8 29.0	-0.0737	.5121	.2027	+35	-41
B. A. C. 3407	6	2.30	14.5	8 52.6	16 27.2	+ 9 36.7	-1.1932	.5120	.2035	-33	-81
π Leonis	5	2.31	14.7	8 36.6	17 34.2	+10 41.8	-1.1275	.5120	.2043	-27	-82
14 Sextantis	6	+2.33	-15.6	+ 6 11.2	21 5.6	- 9 52.8	+0.8019	.5120	-.2063	+90	+ 6
16 Sextantis	6	2.34	15.5	6 45.0	22 23.4	- 8 37.3	-0.0811	.5120	.2071	+35	-42
19 Sextantis	6	2.34	16.1	5 11.9	7 0 18.2	- 6 45.9	+1.2184	.5121	.2081	+90	+36
Weisse X, 315	6 $\frac{1}{2}$	2.41	16.8	4 31.9	7 23.4	+ 0 7.4	+0.4641	.5122	.2116	+68	-14
34 Sextantis	6	2.50	17.0	4 12.0	16 7.5	+ 8 36.4	-1.0488	.5130	.2152	-21	-86
36 Sextantis	6	+2.50	-17.3	+ 3 6.5	17 28.2	+ 9 54.7	-0.1538	.5133	-.2157	+31	-47
B. A. C. 3726	6	2.53	18.0	1 39.2	21 12.4	-10 27.6	+0.6158	.5139	.2168	+80	- 6
55 Leonis	6	2.55	18.1	+ 1 21.9	23 1.6	- 8 41.5	+0.5311	.5143	.2173	+73	-11
B. A. C. 3779	6	2.59	18.7	- 0 6.9	8 3 0.0	- 4 50.1	+1.2697	.5152	.2181	+90	+40
ρ^2 Leonis	6	2.59	18.4	+ 0 38.1	3 12.0	- 4 38.4	+0.4131	.5152	.2182	+64	-17
ρ^4 Leonis	7	+2.61	-18.9	- 0 41.7	6 9.1	- 1 46.4	+1.2025	.5161	-.2186	+90	+43
ρ^5 Leonis	5	2.62	18.6	+ 0 34.4	8 30.4	+ 0 30.7	-0.6792	.5168	.2189	+ 3	-87
B. A. C. 3901	6	2.69	19.1	- 1 3.1	15 51.2	+ 7 38.5	-0.5420	.5192	.2194	+10	-74
ϵ Leonis	5	2.70	19.6	2 21.2	17 6.0	+ 8 51.2	+0.5816	.5197	.2194	+77	- 8
B. A. C. 3955	5 $\frac{1}{2}$	2.75	19.4	1 47.0	21 15.8	-11 6.5	-0.9415	.5213	.2193	-13	-90
B. A. C. 4006	6	+2.81	-20.2	- 4 40.7	9 3 42.7	- 4 51.1	+0.7408	.5240	-.2185	+83	+ 1
B. A. C. 4063	6 $\frac{1}{2}$	2.87	20.1	4 49.3	10 3.0	+ 1 17.6	-0.4867	.5271	.2171	+12	-69
B. A. C. 4201	6 $\frac{1}{2}$	2.98	20.4	8 1.4	22 7.1	-11 0.6	+0.3123	.5340	.2123	+55	-22
η Virginis	6	3.05	20.5	8 48.1	10 0 57.3	- 8 15.6	+0.5326	.5357	.2107	+70	-11
Rumk. 4137	7	3.10	20.1	8 34.5	8 17.5	- 1 9.5	-1.2331	.5403	.2061	-40	-90
B. A. C. 4312	6 $\frac{1}{2}$	+3.13	-20.2	- 9 41.8	9 25.2	- 0 3.9	-0.2888	.5412	-.2053	+21	-56
ι Virginis	5	3.29	19.4	12 5.6	11 1 53.4	- 8 8.3	-1.0474	.5530	.1904	-26	-90
75 Virginis	6	3.35	19.4	14 45.4	4 39.5	- 5 27.9	+1.1932	.5551	.1874	+76	+35
B. A. C. 4531	6	3.32	19.1	12 36.6	5 29.9	- 4 39.2	-1.1907	.5557	.1864	-39	-90
83 Virginis	6	3.42	19.1	15 35.1	9 52.5	- 0 25.5	+1.0872	.5591	.1812	+75	+26
85 Virginis	6	+3.41	-19.0	-15 10.6	10 22.0	+ 0 2.9	+0.5758	.5595	-.1805	+68	- 7
B. A. C. 4700	5 $\frac{1}{2}$	3.50	17.7	15 44.6	21 26.5	+10 44.1	-0.7563	.5684	.1650	-10	-90
B. A. C. 4722	6	3.54	17.7	17 39.0	23 23.5	-11 23.1	+0.8827	.5699	.1621	+73	-11
B. A. C. 4739	6	3.56	17.4	18 10.1	12 0 46.1	-10 3.4	+1.1915	.5710	.1599	+72	+37
ι^1 Libræ	4 $\frac{1}{2}$	3.74	14.0	19 20.7	23 1.8	+11 22.5	-0.7258	.5874	.1203	-13	-90
ι^2 Libræ	6 $\frac{1}{2}$	+3.75	-13.8	-19 12.1	23 28.6	+11 48.3	-0.9219	.5884	-.1173	-26	-90
O. Arg. S., 14428	6 $\frac{1}{2}$	3.78	13.5	20 17.2	13 1 16.9	-10 27.7	-0.0293	.5896	.1134	+24	-41
Anonymous	6 $\frac{1}{2}$	3.84	11.7	21 44.0	9 6.3	- 2 56.5	+0.6153	.5945	.0958	+62	- 3
B. A. C. 5278	6	3.84	10.2	21 8.5	16 50.8	+ 4 29.6	-0.6528	.5989	.0772	-13	-90
B. A. C. 5281	6	3.83	10.2	20 38.4	17 2.2	+ 4 40.6	-1.1730	.5990	.0767	-53	-90
δ Scorpïi	2 $\frac{1}{2}$	+3.88	- 9.9	-22 17.0	18 2.6	+ 5 38.5	+0.4088	.5995	-.0743	+45	-16
B. A. C. 5335	6 $\frac{1}{2}$	3.90	9.3	23 17.0	20 16.0	+ 7 46.6	+1.2560	.6006	.0688	+67	+54
B. A. C. 5354	6 $\frac{1}{2}$	3.91	8.9	23 22.1	21 16.9	+ 8 45.0	+1.2732	.6010	.0663	+67	+59
B. A. C. 5395	6	3.85	8.8	21 5.9	23 14.5	+10 38.0	-1.1376	.6019	.0612	-48	-90
ρ Ophiuchi, <i>mult.</i>	5	3.91	7.6	23 10.4	14 3 46.9	- 9 0.6	+0.6984	.6036	.0496	+65	+ 1
22 Ophiuchi	6 $\frac{1}{2}$	+3.89	- 4.8	-23 19.0	14 56.8	+ 1 41.9	+0.4532	.6068	-.0198	+43	-14
24 Ophiuchi	6 $\frac{1}{2}$	3.88	4.8	22 57.7	15 41.7	+ 2 24.8	+0.0832	.6069	-.0179	+21	-34
39 Ophiuchi, <i>mult.</i>	6	3.89	2.6	24 9.3	23 43.0	+10 6.4	+1.2226	.6079	.0043	+66	+47
B. A. C. 5831	6	3.88	2.8	23 56.5	23 45.2	+10 8.4	+1.0088	.6079	.0043	+66	+23
B. A. C. 5862	7	3.86	2.1	23 43.9	15 2 0.7	-11 41.6	+0.8147	.6079	.0103	+67	+ 9
B. A. C. 5868	6 $\frac{1}{2}$	3.88	1.9	24 8.0	2 24.0	-11 19.3	+1.2218	.6079	.0114	+66	+47
δ Ophiuchi, <i>var.</i>	5	+3.87	- 1.8	-24 3.9	2 52.9	-10 51.6	+1.1585	.6079	+0.127	+66	+38
ϵ^2 Ophiuchi	5	3.86	1.5	23 52.2	4 47.7	- 9 1.5	+0.1922	.6078	.0179	+66	+22
52 Ophiuchi	7	3.79	1.5	21 57.7	6 18.6	- 7 34.3	-0.8847	.6077	.0221	-33	-90
B. A. C. 5954	6	3.78	0.9	21 50.5	7 37.1	- 6 19.1	-0.9738	.6069	.0258	-38	-90
58 Ophiuchi	5	3.77	- 0.6	21 37.4	9 24.0	- 4 36.6	-1.1421	.6065	.0304	-51	-90
B. A. C. 5989	7	+3.83	0.0	-23 37.4	9 40.8	- 4 20.5	+0.8658	.6064	+0.312	+67	+12

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.

May.

STAR'S—				AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0. $\Delta\alpha$ $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	γ'	α'	γ'	N'n.	S'n.
B. A. C. 5992	6 $\frac{1}{2}$	+3.78 - 0.3	-22 8.4	15 9 45.0	- 4 16.5	-0.6145	.6064	+.0315	-16	-35
B. A. C. 6088	6	3.75 + 1.3	22 46.6	16 23.3	+ 2 5.4	+0.2892	.6062	.0492	+36	-22
B. A. C. 6125	7	3.69 1.5	21 27.3	18 25.7	+ 4 2.9	-0.9253	.6057	.0547	-32	-90
Lalande 33210	6 $\frac{1}{2}$	3.69 1.6	21 27.9	18 58.9	+ 4 34.7	-0.8845	.6056	.0561	-30	-90
μ Sagittarii	4	3.65 1.9	21 5.3	20 56.7	+ 6 27.7	-1.1455	.6050	.0613	-49	-90
14 Sagittarii	6 $\frac{1}{2}$	+3.68 + 2.2	-21 44.6	21 7.5	+ 6 38.0	-0.4805	.6050	+.0617	- 5	-72
B. A. C. 6222	6 $\frac{1}{2}$	3.70 3.0	22 58.4	16 0 4.7	+ 9 28.0	+0.9430	.6041	.0693	+67	+18
B. A. C. 6336	6 $\frac{1}{2}$	3.60 4.1	21 29.6	6 12.5	- 8 39.1	-0.0610	.6019	.0849	+19	-43
B. A. C. 6347	6 $\frac{1}{2}$	3.59 4.2	21 9.0	6 36.1	- 8 16.6	-0.3724	.6017	.0859	+ 3	-63
28 Sagittarii	6	3.58 5.1	20 30.8	9 25.4	- 5 34.1	+1.2459	.6005	.0930	+70	+51
O. Arg. S., 18672	6	+3.52 + 4.7	-20 24.1	10 5.4	- 4 55.7	-0.8056	.6002	+.0945	-21	-90
29 Sagittarii	6	3.52 4.8	20 27.4	10 47.2	- 4 15.6	-0.6826	.5999	.0962	-14	-90
30 Sagittarii	6	3.56 5.4	22 17.7	11 12.4	- 3 51.3	+1.1945	.5997	.0971	+68	+41
31 Sagittarii	6	3.55 5.4	22 3.5	11 42.8	- 3 22.2	+1.0062	.5995	.0983	+68	+22
33 Sagittarii	6	3.52 5.4	21 30.1	12 27.0	- 2 39.7	+0.5248	.5991	.1002	+55	- 9
ξ Sagittarii	6	+3.50 + 5.5	-20 48.5	13 46.1	- 1 23.8	-0.0341	.5985	+.1034	+22	-41
ξ^2 Sagittarii	4	3.51 5.7	21 15.6	13 54.6	- 1 15.7	+0.4311	.5984	.1036	+49	-15
Lalande 35497	6 $\frac{1}{2}$	3.44 5.6	19 24.9	16 2.1	+ 0 46.8	-1.1874	.5973	.1088	-49	-90
B. A. C. 6536	6	3.42 6.1	19 28.4	18 5.0	+ 2 44.8	-0.9018	.5963	.1134	-25	-90
B. A. C. 6539	6	3.46 6.5	21 10.3	18 9.8	+ 2 49.4	+0.8044	.5962	.1136	+60	+ 7
π Sagittarii	3	+3.45 + 6.6	-21 12.6	18 38.0	+ 3 16.5	+0.8968	.5959	+.1147	+69	+13
δ Sagittarii	5	3.36 6.5	19 9.6	21 47.0	+ 6 18.0	-0.7794	.5941	.1217	-17	-90
ρ^2 Sagittarii	5 $\frac{1}{2}$	3.33 6.8	18 31.5	23 27.6	+ 7 54.6	-1.2078	.5931	.1254	-49	-90
B. A. C. 6658	6	3.31 7.3	18 35.8	17 1 56.9	+10 18.2	-0.8187	.5916	.1308	-18	-90
Lalande 36857	6 $\frac{1}{2}$	3.32 7.8	19 37.9	3 22.6	+11 40.5	+0.4072	.5908	.1337	+51	-16
57 Sagittarii	5 $\frac{1}{2}$	+3.17 + 9.2	-19 20.6	11 39.5	- 4 21.7	+1.2963	.5855	+.1503	+71	+56
B. A. C. 6992	6 $\frac{1}{2}$	2.94 9.8	15 9.4	23 31.4	+ 7 3.3	-0.9913	.5778	.1715	-25	-90
β Capricorni	3	2.94 9.8	15 9.2	23 37.3	+ 7 8.9	-0.9774	.5777	.1717	-24	-90
B. A. C. 7063	6	2.90 10.4	15 27.0	18 50.9	+11 13.1	+0.0598	.5749	.1783	+35	-36
B. A. C. 7087	6	2.86 10.2	14 7.6	5 11.1	-11 29.6	-1.0313	.5740	.1803	-27	-90
γ^1 Capricorni	6	+2.86 +10.9	-15 33.3	6 30.0	-10 13.6	+0.6142	.5731	+.1822	+72	- 4
γ^2 Capricorni	5	2.85 10.8	15 22.1	7 19.4	- 9 26.1	+0.6063	.5726	.1835	+70	- 6
B. A. C. 7221	6 $\frac{1}{2}$	2.75 10.6	12 58.9	12 14.6	- 4 41.5	-0.8776	.5694	.1903	-15	-90
δ Aquarii	6	2.69 11.2	13 30.5	16 13.5	- 0 51.2	+0.4211	.5669	.1954	+59	-16
η Aquarii	6	2.69 11.4	13 59.4	16 44.8	- 0 21.0	+1.0095	.5666	.1960	+76	+19
ν Aquarii	4 $\frac{1}{2}$	+2.63 +11.2	-11 51.0	20 27.6	+ 3 13.8	-0.4146	.5643	+.2003	+13	-65
17 Aquarii	6	2.52 11.0	9 49.4	19 2 22.3	+ 8 56.1	-1.2610	.5608	.2066	-44	-90
19 Aquarii	6	2.51 11.1	10 15.0	3 22.5	+ 9 54.2	-0.6206	.5603	.2076	+ 3	-82
ξ Aquarii	4 $\frac{1}{2}$	2.41 11.0	8 23.0	8 59.4	- 8 40.6	-1.3326	.5573	.2127	-55	-90
B. A. C. 7562	6 $\frac{1}{2}$	2.39 11.7	9 34.8	12 12.4	- 5 34.1	+0.5688	.5556	.2154	+72	- 8
ϵ^1 Capricorni	6	+2.39 +11.7	- 9 37.5	12 14.8	- 5 31.8	+0.6223	.5556	+.2154	+77	- 6
ϵ^2 Capricorni	6 $\frac{1}{2}$	2.39 11.8	9 49.3	12 49.0	- 4 58.8	+0.9452	.5553	.2159	+80	+14
30 Aquarii	5 $\frac{1}{2}$	2.27 11.7	7 5.6	20 35.0	+ 2 31.3	-0.1283	.5517	.2210	+31	-46
B. A. C. 7744	6	2.20 11.0	5 18.2	20 0 57.4	+ 6 44.9	-0.9804	.5498	.2233	-17	-90
44 Aquarii	6	2.18 11.4	5 58.7	2 58.1	+ 8 41.6	+0.1567	.5489	.2243	+47	-30
51 Aquarii	6	+2.14 +11.4	- 5 26.1	6 13.2	+11 50.2	+0.3340	.5476	+.2256	+58	-21
κ Aquarii	5	2.05 11.4	4 50.3	12 35.8	- 5 59.6	+1.1725	.5454	.2276	+85	+31
3 Piscium	6	1.92 10.3	- 0 27.0	23 23.8	+ 4 27.0	-0.8584	.5425	.2293	- 8	-90
κ Piscium	4 $\frac{1}{2}$	1.78 10.1	+ 0 36.4	21 11 54.4	- 7 26.6	+0.9179	.5403	.2281	+90	+12
9 Piscium	6	1.78 10.1	0 28.3	12 3.5	- 7 17.8	+1.0919	.5403	.2281	+90	+24
Yarnall 10387	7	1.76 9.8	1 42.7	13 54.3	- 5 30.5	+0.2336	.5401	.2277	+52	-27
16 Piscium	6	+1.74 + 9.8	+ 1 26.7	16 26.4	- 3 3.3	+1.0852	.5397	+.2270	+90	+24
19 Piscium	6	1.69 9.5	2 49.8	21 13.6	+ 1 34.7	+0.7376	.5393	.2253	+90	+ 1
ω Piscium	4	1.63 8.4	6 12.4	22 3 24.7	+ 7 33.9	-1.3766	.5392	.2244	-63	-84
36 Piscium	6 $\frac{1}{2}$	1.58 8.0	7 35.0	11 40.6	- 8 26.1	-0.9913	.5394	.2180	-17	-83
δ Piscium	5 $\frac{1}{2}$	1.56 8.1	7 31.9	13 36.2	- 6 34.2	-0.5199	.5396	.2167	+11	-70
45 Piscium	6	+1.53 + 8.1	+ 7 2.1	16 2.4	- 4 12.7	+0.5228	.5398	+.2150	+72	-10

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

May.

STAR'S—				AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0. $\Delta\alpha$ $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
75 Piscium	6 $\frac{1}{2}$	+1.41 + 6.5	+12 19.2	23 11 28.3	- 9 24.4	-0.9656	.5429	+1981	-17	-78
η Piscium	3 $\frac{1}{2}$	1.32 5.5	14 44.0	23 11.8	+ 1 56.3	-1.2874	.5455	.1847	-47	-76
101 Piscium	6	1.31 5.6	14 3.2	24 1 13.0	+ 3 53.5	-0.1995	.5460	.1831	+28	-45
104 Piscium	6 $\frac{1}{2}$	1.30 5.7	13 41.0	2 50.7	+ 5 28.0	+0.4842	.5464	.1800	+70	- 8
B. A. C. 524	6 $\frac{1}{2}$	1.31 5.3	15 10.7	4 19.7	+ 6 54.1	-0.8291	.5467	.1781	- 8	-75
27 Arietis	6	+1.21 + 4.1	+17 10.7	25 2 43.3	+ 4 33.1	+0.6755	.5524	+1446	+90	+ 7
B. A. C. 782	6 $\frac{1}{2}$	1.21 3.8	18 21.4	3 56.4	+ 5 43.7	-0.4053	.5527	.1427	+17	-52
μ Arietis	5 $\frac{1}{2}$	1.21 3.6	19 30.3	8 4.7	+ 9 43.9	-1.0782	.5537	.1359	-27	-71
40 Arietis	6	1.18 3.7	17 47.5	10 45.7	-11 40.8	+1.1329	.5544	.1310	+90	+40
47 Arietis	6	1.19 3.1	20 11.5	15 3.2	- 7 32.0	-0.8896	.5554	.1234	-13	-70
δ Arietis	4 $\frac{1}{2}$	+1.17 + 2.9	+19 16.6	21 12.2	- 1 35.5	+0.8156	.5567	+1121	+90	+19
ζ Arietis	4 $\frac{1}{2}$	1.16 + 2.7	20 36.2	22 40.0	- 0 10.7	-0.4472	.5569	+1093	+14	-52
B. A. C. 1801	6	1.25 - 1.5	23 8.8	28 17 17.2	- 7 50.5	-0.3878	.5538	-.0278	+17	-40
141 Tauri	6	1.27 2.1	22 23.7	29 1 42.6	+ 0 17.8	+0.0886	.5522	.0448	+44	-14
1 Geminorum	5	1.28 2.1	23 16.1	2 48.4	+ 1 21.4	-0.9208	.5519	.0470	-16	-67
B. A. C. 1970	6 $\frac{1}{2}$	+1.29 - 2.4	+22 12.5	5 19.8	+ 3 47.6	+0.1186	.5510	-.0522	+46	-14
3 Geminorum	6	1.30 2.3	23 7.8	5 23.9	+ 3 51.7	-0.8993	.5510	.0522	-15	-67
6 Geminorum	6	1.30 2.4	22 56.0	6 35.8	+ 5 1.2	-0.7459	.5506	.0545	- 4	-67
η Geminorum	3 $\frac{1}{2}$	1.29 2.5	22 32.3	7 47.7	+ 6 10.7	-0.3797	.5502	.0569	+17	-42
B. A. C. 2039	6 $\frac{1}{2}$	1.36 2.9	21 15.1	10 50.2	+ 9 7.1	+1.0406	.5490	.0628	+90	+30
μ Geminor., <i>mult.</i>	3	+1.32 - 2.7	+22 34.3	11 32.5	+ 9 48.0	-0.6433	.5488	-.0641	+ 2	-62
15 Geminorum	6	1.31 3.1	20 51.6	13 50.1	-11 58.9	+1.0912	.5479	.0685	+90	+43
δ Geminorum	6	1.38 3.8	21 54.0	30 1 0.1	- 1 10.8	-0.9352	.5434	.0889	-17	-68
ζ Geminor., <i>mult.</i>	4	1.39 4.4	20 44.5	7 1.2	+ 4 38.6	-0.2236	.5407	.0997	+27	-37
56 Geminorum	5 $\frac{1}{2}$	+1.45 - 5.1	+20 40.0	15 38.2	-11 0.9	-1.0585	.5370	-.1138	-26	-70
B. A. C. 2432	6 $\frac{1}{2}$	1.43 5.6	18 29.9	16 14.0	-10 26.3	+1.2720	.5367	.1148	+90	+59
61 Geminorum	6	1.47 5.3	20 29.5	18 3.9	- 8 39.7	-1.1476	.5359	.1177	-34	-70
f Geminorum	6	1.48 6.3	17 56.5	31 0 16.5	- 2 38.7	+0.9166	.5331	.1271	+90	+23
g Geminorum	5 $\frac{1}{2}$	+1.52 - 6.3	+18 47.8	3 32.8	+ 0 31.4	-0.4541	.5316	-.1321	+14	-55
3 Cancri	6	1.54 7.1	17 37.9	10 52.8	+ 7 37.9	-0.1676	.5283	.1423	+30	-39
5 Cancri	6	1.54 7.4	16 46.8	11 15.4	+ 7 59.9	+0.7214	.5281	.1429	+90	+ 9
B. A. C. 2731	6 $\frac{1}{2}$	+1.58 - 7.5	+17 21.7	15 31.8	-11 51.5	-0.5461	.5262	-.1486	+ 9	-63

June.

29 Cancri	6	+1.62 - 8.8	+14 36.0	1 1 3.7	- 2 36.9	+1.0442	.5222	-.1603	+90	+28
B. A. C. 3031	6 $\frac{1}{2}$	1.73 9.6	14 38.0	15 2.9	+10 57.5	-1.3437	.5167	.1757	-65	-76
α Cancri	4	1.71 10.4	12 18.9	16 34.2	-11 33.8	+0.9565	.5161	.1771	+90	+20
B. A. C. 3122	6 $\frac{1}{2}$	1.77 10.8	12 2.7	22 30.5	- 5 47.9	+0.1861	.5143	.1828	+50	-25
ω Leonis	6	1.82 12.2	9 34.2	2 8 26.1	+ 3 50.6	+1.0661	.5118	.1913	+90	+26
λ Leonis	6	+1.84 -12.0	+10 14.2	10 17.6	+ 5 38.9	-0.0267	.5115	-.1928	+37	-37
σ Leonis	3 $\frac{1}{2}$	1.89 12.2	10 25.8	15 12.1	+10 25.0	-1.1954	.5106	.1964	-34	-80
Weisse IX, 1035	7	1.94 13.2	8 14.3	23 8.1	- 5 52.6	-0.3546	.5094	.2017	+20	-58
B. A. C. 3407	6	1.97 13.1	8 52.6	3 0 18.7	- 4 44.0	-1.2960	.5093	.2023	-45	-81
π Leonis	5	1.97 13.1	8 36.7	1 26.3	- 3 38.2	-1.2297	.5091	.2030	-37	-82
14 Sextantis	6	+1.99 -14.1	+ 6 11.2	5 0.3	- 0 10.3	+0.7122	.5088	-.2050	+90	+ 1
16 Sextantis	6	2.00 14.0	6 45.0	6 19.1	+ 1 6.3	-0.1779	.5087	.2057	+29	-48
Weisse X, 315	6 $\frac{1}{2}$	2.09 15.2	4 32.0	15 26.3	+ 9 58.0	+0.3615	.5085	.2100	+69	-19
34 Sextantis	6	2.18 15.4	4 12.0	4 0 18.3	- 5 25.0	-1.1487	.5090	.2131	-29	-86
36 Sextantis	6	2.19 15.9	3 6.6	1 40.2	- 4 5.5	-0.2466	.5091	.2135	+26	-53
B. A. C. 3726	6	2.22 16.4	1 39.2	5 28.1	- 0 24.1	+0.5301	.5095	.2145	+73	-11
55 Leonis	6	+2.24 -16.8	+ 1 22.0	7 19.6	+ 1 24.4	+0.4444	.5098	-.2149	+66	-15
B. A. C. 3779	6	2.28 17.3	- 0 6.9	11 21.6	+ 5 19.4	+1.1885	.5104	.2158	+90	+32
p^2 Leonis	6	2.28 17.1	+ 0 38.1	11 33.9	+ 5 31.3	+0.3275	.5104	.2158	+58	-21
p^1 Leonis	7	2.32 17.5	- 0 41.7	14 34.0	+ 8 26.3	+1.1251	.5110	.2163	+90	+27
p^5 Leonis	5	2.34 17.1	+ 0 34.4	16 57.8	+10 46.0	-0.7713	.5116	.2165	+ 3	-78
B. A. C. 3901	6	+2.42 -17.7	- 1 3.0	5 0 26.7	- 5 58.1	-0.6302	.5137	-.2168	- 5	-82

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.

June.

Star's—					AT CONJUNCTION IN R. A.						Limiting Parallels	
Name.	Mag.	Red'ns from 1881.0. $\Delta\alpha$ $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N°	S°		
ϵ Leonis	5	+2.44 -18.1	-2 21.1	5 1 43.0	-4 44.0	+0.5039	.5141	-.2168	+71	-12		
B. A. C. 3955	5½	2.49 17.9	1 47.0	5 57.6	-0 36.8	-1.0304	.5155	.2165	-20	-90		
B. A. C. 4006	6	2.56 19.0	4 40.7	12 31.9	+5 46.0	+0.6712	.5181	.2156	+84	-3		
B. A. C. 4063	6½	2.63 18.9	4 49.3	18 59.7	-11 57.7	-0.5648	.5210	.2141	+8	-76		
B. A. C. 4201	6½	2.79 19.7	8 1.3	6 7 17.8	-0 2.0	+0.2474	.5272	.2093	+51	-26		
η Virginis	6	+2.84 -19.8	-8 48.1	10 11.3	+2 46.2	+0.4711	.5294	-.2078	+66	-14		
Rumk. 4137	7	2.92 19.2	8 34.5	17 39.7	+10 0.6	-1.3032	.5344	.2032	-49	-90		
B. A. C. 4312	6½	2.95 19.5	9 41.7	18 48.5	+11 7.3	-0.3510	.5351	.2025	+18	-60		
ι Virginis	5	3.18 18.9	12 5.6	7 11 33.7	+3 20.0	-1.1028	.5477	.1882	-31	-90		
75 Virginis	6	3.26 19.5	14 45.4	14 22.3	+6 3.0	+1.1524	.5500	.1852	+76	+31		
B. A. C. 4531	6	+3.24 -18.7	-12 36.6	15 13.4	+6 52.4	-1.2442	.5507	-.1842	-45	-90		
83 Virginis	6	3.34 19.0	15 35.1	19 39.8	+11 9.9	+1.0481	.5543	.1790	+75	+23		
85 Virginis	6	3.34 18.9	15 10.6	20 9.7	+11 38.8	+0.5345	.5549	.1784	+65	-10		
B. A. C. 4700	5½	3.50 17.7	15 44.6	8 7 22.2	-1 32.1	-0.7958	.5644	.1634	-13	-90		
B. A. C. 4722	6	3.56 18.0	17 39.0	9 20.5	+0 22.0	+0.8500	.5662	.1604	+73	+9		
B. A. C. 4739	6	+3.57 -17.8	-18 10.1	10 43.8	+1 42.3	+1.1614	.5675	-.1582	+72	+34		
α Libræ	4½	3.87 14.4	19 20.7	9 9 7.3	-0 43.9	-0.7461	.5868	.1174	-15	-90		
β Libræ	6½	3.87 14.2	19 12.1	9 34.2	-0 18.0	-0.9484	.5871	.1164	-28	-90		
O. Arg. S., 14428	6½	3.91 14.0	20 17.2	11 22.6	+1 26.2	-0.0487	.5886	.1126	+23	-42		
Anonymous	6½	4.01 12.5	21 44.0	19 11.6	+8 57.0	+0.5998	.5900	.0953	+60	-5		
B. A. C. 5278	6	+4.07 -10.6	-21 8.5	10 2 54.5	-7 38.6	-0.6609	.5908	-.0768	-14	-90		
B. A. C. 5281	6	4.06 10.5	20 38.4	3 5.8	-7 27.7	-1.1790	.6000	.0764	-54	-90		
δ Scorpii	2½	4.12 10.4	22 17.0	4 5.9	-6 30.1	+0.3975	.6006	.0741	+44	-17		
B. A. C. 5335	6½	4.16 10.2	23 17.0	6 18.5	-4 22.8	+1.2422	.6019	.0685	+67	+50		
B. A. C. 5354	6½	4.19 9.6	23 22.1	7 19.0	-3 24.9	+1.2679	.6026	.0658	+67	+57		
B. A. C. 5395	6	+4.14 -8.9	-21 5.9	9 15.6	-1 32.8	-1.1395	.6037	-.0609	-49	-90		
ρ Ophiuchi, mult.	5	4.22 8.0	23 10.4	13 45.7	+2 46.2	+0.6902	.6062	.0492	+65	0		
22 Ophiuchi	6½	4.28 5.0	23 19.0	11 0 47.8	-10 39.0	+0.4508	.6110	.0195	+43	-14		
24 Ophiuchi	6½	4.27 4.9	22 57.7	1 32.0	-9 56.7	-0.0837	.6112	-.0173	+21	-34		
39 Ophiuchi, mult.	6	4.34 2.8	24 9.3	9 25.7	-2 22.8	+1.2170	.6133	+0.045	+66	+46		
B. A. C. 5831	6	+4.33 -2.8	-23 56.5	9 27.9	-2 20.7	+1.0053	.6133	+0.046	+66	+23		
B. A. C. 5862	7	4.33 2.1	23 43.9	11 41.0	-0 13.2	+0.8134	.6136	.0108	+67	+9		
B. A. C. 5868	6½	4.34 2.0	24 8.0	12 3.8	+0 8.6	+1.2165	.6136	.0120	+66	+46		
b Ophiuchi, var.	5	4.33 1.9	24 3.9	12 32.2	+0 35.8	+1.1540	.6137	.0134	+66	+37		
c Ophiuchi	5	4.33 1.4	23 52.2	14 24.9	+2 23.8	+0.9901	.6139	.0187	+66	+21		
52 Ophiuchi	7	+4.27 -1.0	-21 57.8	15 54.1	+3 49.3	-0.8678	.6140	+0.255	-31	-90		
B. A. C. 5954	6	4.27 0.7	21 50.5	17 10.9	+5 2.8	-0.9561	.6141	.0263	-37	-90		
58 Ophiuchi	5	4.27 0.2	21 37.4	18 55.7	+6 43.2	-1.1218	.6141	.0313	-49	-90		
B. A. C. 5989	7	4.33 0.1	23 37.4	19 12.1	+6 58.9	+0.8658	.6141	.0318	+67	+12		
B. A. C. 5992	6½	4.28 -0.1	22 8.4	19 16.3	+7 2.9	-0.5995	.6141	.0321	-15	-83		
4 Sagittarii	5	+4.34 +1.4	-23 48.2	12 0 57.5	-11 30.3	+1.2726	.6137	+0.480	+66	+61		
B. A. C. 6088	6	4.29 1.5	22 46.6	1 45.9	-10 44.0	+0.2975	.6136	.0502	+36	-22		
B. A. C. 6125	7	4.25 2.1	21 27.3	3 45.5	-8 49.3	-0.9026	.6134	.0557	-31	-90		
Lalande 33210	6½	4.25 2.3	21 27.9	4 17.9	-8 18.3	-0.8630	.6132	.0570	-27	-90		
μ Sagittarii	4	4.23 2.8	21 5.3	6 12.9	-6 28.1	-1.1189	.6128	.0627	-46	-90		
14 Sagittarii	6½	+4.26 +2.8	-21 44.5	6 23.4	-6 18.1	-0.4464	.6128	+0.629	-6	-68		
B. A. C. 6222	6½	4.27 3.9	22 58.4	9 16.2	-3 32.5	+0.9460	.6122	.0707	+67	+18		
B. A. C. 6336	6½	4.21 5.3	21 29.6	15 14.6	+2 10.8	-0.0444	.6105	.0865	+20	-42		
B. A. C. 6347	6½	4.19 5.4	21 9.0	15 37.5	+2 32.8	-0.3518	.6104	.0875	+4	-61		
28 Sagittarii	6	4.22 6.2	22 30.8	18 24.1	+5 12.5	+1.2471	.6094	.0946	+68	+49		
O. Arg. S., 18672	6	4.16 6.1	20 24.0	19 1.2	+5 48.1	-0.7776	.6091	.0962	-19	-90		
29 Sagittarii	6	+4.15 +6.3	-20 27.4	19 41.8	+6 27.0	-0.6563	.6089	+0.979	-12	-90		
30 Sagittarii	6	4.21 6.6	22 17.7	20 6.4	+6 50.5	+1.1967	.6087	.0989	+68	+41		
31 Sagittarii	6	4.20 6.7	22 3.4	20 35.9	+7 18.8	+1.0109	.6086	.1002	+68	+22		
33 Sagittarii	6	4.17 6.9	21 30.1	21 19.0	+8 0.1	+0.5360	.6082	.1022	+56	-9		
ζ Sagittarii	6	4.15 7.1	20 48.5	22 35.8	+9 13.9	-0.0151	.6076	.1052	+23	-40		
η Sagittarii	4	+4.16 +7.2	-21 15.6	22 43.7	+9 21.6	+0.4443	.6076	+1.053	+50	-14		

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

June.

STAR'S—				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N'n.	S'n.
		$\Delta\alpha$	$\Delta\delta$		$\begin{smallmatrix} d & h & m \\ \hline & & \end{smallmatrix}$	$\begin{smallmatrix} h & m \\ \hline & \end{smallmatrix}$				$\begin{smallmatrix} ^\circ & ' \\ \hline & \end{smallmatrix}$	$\begin{smallmatrix} ^\circ & ' \\ \hline & \end{smallmatrix}$
Lalande 35497	6 $\frac{1}{2}$	+4.10	+7.4	-19 24.8	13 0 47.9	+11 20.5	-1.1521	.6066	+1.105	-45	-90
Lalande 35499	6	4.09	7.4	19 16.3	0 49.3	+11 21.8	-1.2903	.6066	.1107	-66	-90
B. A. C. 6536	6	4.08	7.9	19 28.4	2 47.2	-10 45.2	-0.8692	.6057	.1153	-23	-90
B. A. C. 6539	6	4.13	8.1	21 10.2	2 51.9	-10 40.7	+0.8134	.6056	.1155	+69	+8
π Sagittarii	3	4.12	8.2	21 12.5	3 19.3	-10 14.4	+0.9043	.6054	.1166	+69	+14
δ Sagittarii	5	+4.05	+8.7	-19 9.6	6 22.7	-7 18.4	-0.7479	.6038	+1.238	-15	-90
ρ^2 Sagittarii	5 $\frac{1}{2}$	4.01	9.4	18 31.5	8 0.3	-5 44.8	-1.1700	.6029	.1276	-45	-90
B. A. C. 6658	6	4.00	9.6	18 35.7	10 25.2	-3 25.7	-0.7859	.6008	.1332	-16	-90
Lalande 36857	6 $\frac{1}{2}$	4.02	10.2	19 37.9	11 48.3	-2 6.0	+0.4391	.6007	.1363	+53	-15
57 Sagittarii	5 $\frac{1}{2}$	3.94	11.9	19 20.5	19 49.9	+5 36.3	+1.3011	.5958	.1532	+71	+57
B. A. C. 6992	6 $\frac{1}{2}$	+3.72	+13.2	-15 9.3	14 7 19.4	-7 21.1	-0.9510	.5878	+1.747	-22	-90
β Capricorni	3	3.72	13.2	15 9.1	7 25.1	-7 15.5	-0.9371	.5878	.1748	-21	-90
B. A. C. 7063	6	3.68	14.0	15 26.9	11 30.8	-3 19.3	+0.0850	.5849	.1815	+37	-34
B. A. C. 7087	6	3.64	13.9	14 7.5	12 48.4	-2 4.6	-0.9895	.5841	.1834	-23	-90
τ^1 Capricorni	6	3.65	14.4	15 33.2	14 4.9	-0 50.9	+0.6610	.5832	.1855	+72	-3
τ^2 Capricorni	5	+3.64	+14.6	-15 22.0	14 52.7	-0 5.0	+0.6243	.5826	+1.868	+71	-5
B. A. C. 7221	6 $\frac{1}{2}$	3.55	14.7	12 58.8	19 38.7	+4 30.3	-0.8379	.5792	.1936	-12	-90
8 Aquarii	6	3.51	15.3	13 30.4	23 30.2	+8 13.2	+0.4426	.5767	.1987	+60	-15
9 Aquarii	6	3.51	15.6	13 59.3	15 0 0.6	+8 42.4	+1.0231	.5763	.1993	+76	+20
ν Aquarii	4 $\frac{1}{2}$	3.43	15.5	11 50.9	3 36.7	-11 49.5	-0.3808	.5739	.2037	+15	-62
17 Aquarii	6	+3.34	+15.6	-9 49.3	9 20.8	-6 17.8	-1.2170	.5709	+2.100	-39	-90
19 Aquarii	6	3.33	15.9	10 14.9	10 19.3	-5 21.5	-0.5839	.5692	.2110	+5	-78
ξ Aquarii	4 $\frac{1}{2}$	3.24	15.9	8 22.9	15 46.5	-0 6.0	-1.2865	.5657	.2160	-46	-90
B. A. C. 7562	6 $\frac{1}{2}$	3.23	16.6	9 34.7	18 54.3	+2 55.2	+0.5899	.5637	.2184	+74	-7
ϵ^1 Capricorni	6	3.23	16.6	9 37.4	18 56.5	+2 57.4	+0.6438	.5636	.2185	+78	-4
ϵ^2 Capricorni	6 $\frac{1}{2}$	+3.22	+16.8	-9 49.2	19 29.8	+3 29.5	+0.9612	.5633	+2.188	+80	+15
30 Aquarii	5 $\frac{1}{2}$	3.11	16.6	7 5.5	16 3 3.6	+10 47.4	-0.0985	.5588	.2238	+32	-44
B. A. C. 7744	6	3.03	16.4	5 18.1	7 19.4	-9 5.6	-0.9406	.5565	.2260	-14	-90
44 Aquarii	6	3.02	16.6	5 58.6	9 17.2	-7 11.7	+0.1828	.5555	.2269	+48	-29
51 Aquarii	6	2.97	16.7	5 26.0	12 27.8	-4 7.7	+0.3591	.5539	.2281	+59	-20
κ Aquarii	5	+2.90	+16.8	-4 50.2	18 42.1	+1 54.0	+1.1877	.5510	+2.295	+85	+32
3 Piscium	6	2.75	15.7	-0 26.9	17 5 17.6	-11 51.8	-0.8238	.5468	.2310	-6	-90
λ Piscium	4 $\frac{1}{2}$	2.63	15.7	+0 36.5	17 36.6	+0 2.9	+0.9354	.5433	.2292	+90	+13
9 Piscium	6	2.62	15.7	0 28.4	17 45.6	+0 11.7	+1.1084	.5432	.2292	+90	+25
Yarnall 10387	7	2.60	15.2	1 42.8	19 34.9	+1 57.4	+0.2555	.5428	.2287	+54	-25
16 Piscium	6	+2.57	+15.4	+1 26.8	22 5.3	+4 22.9	+1.1018	.5424	+2.279	+90	+25
19 Piscium	6	2.53	14.9	2 49.9	18 2 49.3	+8 57.7	+0.7566	.5422	.2276	+90	+2
ω Piscium	4	2.46	13.5	6 12.5	8 57.1	-9 6.4	-1.3499	.5408	.2231	-54	-84
36 Piscium	6 $\frac{1}{2}$	2.40	13.0	7 35.0	17 9.8	-1 9.5	-0.9658	.5405	.2181	-15	-83
δ Piscium	5 $\frac{1}{2}$	2.37	13.0	7 32.0	19 4.8	+0 41.8	-0.4972	.5400	.2168	+12	-68
45 Piscium	6	+2.35	+13.2	+7 2.2	21 30.5	+3 2.8	+0.5424	.5399	+2.150	+74	-9
75 Piscium	6 $\frac{1}{2}$	2.20	10.6	12 19.2	19 16 55.4	-2 9.9	-0.9681	.5412	.1972	-16	-78
η Piscium	3 $\frac{1}{2}$	2.09	9.2	14 44.1	20 4 41.6	+9 13.3	-1.2735	.5429	.1836	-45	-76
101 Piscium	6	2.08	9.4	14 3.3	6 43.3	+11 11.1	-0.1859	.5433	.1809	+29	-44
104 Piscium	6 $\frac{1}{2}$	2.07	9.4	13 41.1	8 21.7	-11 13.7	+0.5003	.5435	.1789	+71	-7
B. A. C. 524	6 $\frac{1}{2}$	+2.07	+8.9	+15 10.8	9 51.1	-9 48.2	-0.8158	.5436	+1.782	-7	-75
27 Arietis	6	1.91	6.9	17 10.7	21 8 26.0	-11 56.8	+0.6879	.5484	.1435	+90	+8
B. A. C. 782	6 $\frac{1}{2}$	1.92	6.5	18 21.4	9 39.6	-10 45.7	-0.3968	.5486	.1416	+17	-52
μ Arietis	5 $\frac{1}{2}$	1.90	5.8	19 30.3	13 40.9	-6 52.6	-1.0708	.5496	.1348	-25	-71
40 Arietis	6	1.87	6.1	17 47.5	16 33.2	-4 5.8	+1.1460	.5503	.1300	+90	+42
47 Arietis	6	1.86	5.2	20 21.5	20 53.4	+0 5.7	-0.8837	.5512	.1225	-12	-70
δ Arietis	4 $\frac{1}{2}$	+1.80	+5.0	+19 16.6	22 3 6.5	+6 6.1	+0.8266	.5526	+1.113	+90	+20
ζ Arietis	4 $\frac{1}{2}$	1.79	4.5	20 36.2	4 36.2	+7 32.0	-0.4411	.5529	.1085	+14	-51
B. A. C. 1032	6 $\frac{1}{2}$	1.79	4.5	20 4.7	7 18.7	+10 9.8	+0.4146	.5534	.1035	+66	-3
τ^1 Arietis	5	1.79	4.4	20 43.1	7 27.9	+10 18.8	-0.2599	.5534	.1031	+24	-40
τ^2 Arietis	6	1.79	4.3	20 19.0	8 9.8	+10 59.3	+0.2453	.5535	.1018	+54	-12
65 Arietis	6	+1.78	+4.2	+20 22.9	8 55.5	+11 43.4	+0.2525	.5537	+1.003	+54	-11

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.

June.

Star's—				AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0. $\Delta\alpha$ $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
B. A. C. 1143	6	+1.72 + 3.5	+20° 33.0	^{d h m} 22 18 1.4	^{h m} - 3 29.3	+0.9053	.5550	+0.0827	+90°	+28
32 Tauri	6	1.72 2.7	22 8.1	23 36.4	+ 1 54.4	-0.3820	.5557	.0718	+17	-44
33 Tauri	6	1.73 2.6	22 49.8	23 41.1	+ 1 59.0	-1.1303	.5557	.0716	-34	-67
A ¹ Tauri	4½	1.69 2.4	21 45.4	23 3 9.2	+ 5 20.1	+0.2711	.5560	.0646	+56	- 7
A ² Tauri	6	1.69 2.4	21 41.3	3 26.2	+ 5 36.5	+0.3634	.5561	.0640	+62	- 2
B. A. C. 1281	6	+1.68 + 2.0	+22 6.5	6 50.3	+ 8 53.7	+0.1124	.5563	+0.0570	+46	-14
51 Tauri	7	1.65 1.9	21 17.3	9 29.9	+11 19.1	+1.1421	.5565	.0519	+90	+49
56 Tauri	6½	1.65 1.8	21 29.1	9 54.0	+11 51.1	+0.9561	.5565	.0508	+90	+34
a ¹ Tauri	5½	1.65 1.6	22 1.3	12 28.8	- 9 39.4	+0.4977	.5566	.0455	+73	+ 7
a ² Tauri	6½	1.65 1.6	21 55.7	12 39.4	- 9 37.9	+0.6001	.5566	.0454	+83	+13
v ¹ Tauri	4½	+1.65 + 1.4	+22 32.6	12 53.7	- 9 15.3	-0.0521	.5566	+0.0447	+36	-22
v ² Tauri	6	1.65 1.4	22 43.6	13 20.9	- 8 49.1	-0.2319	.5566	.0437	+26	-32
Rumk. 1250	6½	1.63 0.8	22 45.8	20 4.5	- 2 19.3	-0.0255	.5567	.0298	+38	-19
r Tauri	4½	1.63 + 0.8	22 43.6	20 5.7	- 2 18.1	-0.0140	.5567	+0.0207	+40	-17
γ Geminorum	5½	1.52 - 6.3	18 47.8	27 10 13.3	+ 8 59.4	-0.4318	.5326	-1.320	+15	-54
3 Cancri	6	+1.53 - 6.9	+17 37.9	17 33.2	- 7 54.2	-0.1429	.5295	-1.418	+31	-37
5 Cancri	6	1.52 7.0	16 46.8	17 55.8	- 7 32.2	+0.7489	.5292	.1430	+90	+11
B. A. C. 2731	6½	1.55 7.2	17 21.7	22 12.0	- 3 23.8	-0.5199	.5273	.1485	+10	-61
29 Cancri	6	1.55 8.4	14 36.0	28 7 43.6	+ 5 50.6	+1.0765	.5234	.1605	+90	+31
B. A. C. 3031	6½	1.61 9.2	14 38.0	21 43.0	- 4 34.8	-1.3128	.5179	.1757	-52	-76
a Cancri	4	+1.60 - 9.7	+12 18.9	23 14.3	- 3 6.1	+0.9952	.5174	-1.772	+90	+22
B. A. C. 3122	6½	1.63 10.1	12 2.7	29 5 10.9	+ 2 40.1	+0.2241	.5155	.1828	+52	-23
ω Leonis	6	1.68 10.7	9 34.3	15 7.6	-11 40.4	+1.1110	.5125	.1911	+90	+20
α Leonis	6	1.68 11.1	10 14.2	16 59.3	- 9 51.9	+0.0145	.5120	.1925	+40	-35
o Leonis	3½	1.72 11.2	10 25.8	21 54.9	- 5 4.7	-1.1572	.5108	.1961	-30	-80
Weisse IX, 1035	7	+1.75 -12.1	+ 8 14.3	30 5 52.9	+ 2 39.8	-0.3098	.5091	-2.011	+22	-55
B. A. C. 3407	6	1.76 11.9	8 52.6	7 3.8	+ 3 48.7	-1.2557	.5089	.2018	-38	-81
π Leonis	5	1.77 12.0	8 36.7	8 11.9	+ 4 55.0	-1.1893	.5087	.2024	-33	-82
14 Sextantis	6	1.78 12.8	6 11.3	11 47.1	+ 8 24.1	+0.7625	.5081	.2044	+90	+ 4
16 Sextantis	6	1.79 12.7	6 45.0	13 6.3	+ 9 41.1	-0.1299	.5080	.2051	+32	-45
Weisse X, 315	6½	+1.85 -13.6	+ 4 32.0	22 17.6	- 5 23.1	+0.4155	.5072	-2.091	+64	-16

July.

34 Sextantis	6	+1.93 -14.0	+ 4 12.0	^{d h m} 1 7 14.5	^{h m} + 3 18.7	-1.1018	.5070	-2.119	-25	-86
36 Sextantis	6	1.93 14.3	3 6.6	8 37.4	+ 4 39.3	-0.1938	.5070	.2122	+28	-50
B. A. C. 3726	6	1.96 14.7	1 39.3	12 27.9	+ 8 23.4	+0.5891	.5071	.2130	+78	- 7
55 Leonis	6	1.98 15.0	+ 1 22.0	14 20.7	+10 13.0	+0.5043	.5072	.2134	+71	-12
B. A. C. 3779	6	+2.01 -15.4	- 0 6.9	18 25.7	- 9 48.8	+1.2552	.5076	-2.140	+90	+39
p ¹ Leonis	6	2.02 15.2	+ 0 38.1	18 38.2	- 9 36.8	+0.3877	.5076	.2141	+62	-18
p ² Leonis	7	2.04 15.6	- 0 41.6	21 40.8	- 6 39.3	+1.1918	.5080	.2144	+90	+32
p ³ Leonis	5	2.07 15.3	+ 0 34.4	2 0 6.7	- 4 17.5	-0.7189	.5084	.2146	0	-87
B. A. C. 3901	6	+2.15 -15.9	- 1 3.0	7 42.7	+ 3 5.6	-0.5748	.5099	-2.149	+ 8	-77
e Leonis	5	2.16 16.4	2 21.1	9 0.2	+ 4 29.8	+0.5680	.5102	.2148	+76	- 9
B. A. C. 3955	5½	2.21 16.2	1 47.0	13 19.2	+ 8 32.4	-0.9783	.5113	.2144	-16	-90
B. A. C. 4006	6	2.28 17.2	4 40.6	20 0.9	- 8 57.4	+0.7382	.5134	.2134	+83	+ 1
B. A. C. 4063	6½	2.36 17.0	4 49.2	2 36.5	- 2 33.1	-0.5083	.5156	.2117	+11	-71
B. A. C. 4201	6½	+2.52 -17.9	- 8 1.3	15 11.1	+ 9 39.1	+0.3139	.5214	-2.067	+55	-22
γ Virginis	6	2.56 18.1	8 48.0	18 8.8	-11 28.5	+0.5398	.5230	.2052	+70	-10
Rumk. 4137	7	2.66 17.7	8 34.5	4 1 48.2	- 4 3.1	-1.2549	.5274	.2006	-42	-90
B. A. C. 4312	6½	2.69 18.0	9 41.7	2 58.8	- 2 54.6	-0.2918	.5282	.1998	+21	-56
i Virginis	5	2.94 17.7	12 5.6	20 10.5	-10 15.3	-1.0556	.5398	.1854	-27	-90
75 Virginis	6	+3.02 -18.3	-14 45.4	23 3.7	- 7 27.8	+1.2300	.5419	-1.825	+76	+39
B. A. C. 4531	6	3.00 17.6	12 36.5	23 56.2	- 6 36.9	-1.1981	.5426	.1816	-40	-90
83 Virginis	6	3.10 18.1	15 35.1	5 4 29.9	- 2 12.1	+1.1207	.5461	.1766	+75	+29
85 Virginis	6	3.11 17.9	15 10.5	5 0.6	- 1 42.4	+0.5981	.5465	.1760	+70	- 6
B. A. C. 4700	5½	+3.28 -16.8	-15 44.6	16 31.6	+ 9 25.3	-0.7482	.5561	-1.612	-10	-90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

July.

STAR'S—					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N'n.	S'n.
		$\Delta\alpha$	$\Delta\delta$		$\begin{smallmatrix} h \\ m \\ s \end{smallmatrix}$	$\begin{smallmatrix} h \\ m \\ s \end{smallmatrix}$					
B. A. C. 4722	6	+3.34	-17.1	-17 39.0	5 18 32.9	+11 22.4	+0.9162	.5578	-.1582	+73	+14
B. A. C. 4739	6	3.38	17.1	18 10.1	19 58.6	-11 14.9	+1.2308	.5590	.1562	+72	+42
α Libræ	4½	3.75	13.8	19 20.7	6 18 56.3	+10 53.2	-0.7061	.5790	.1161	-12	-90
β Libræ	6½	3.76	13.6	19 12.1	19 23.8	+11 19.6	-0.9045	.5793	.1153	-25	-90
O. Arg. S., 14428	6½	3.81	13.6	20 17.2	21 14.8	-10 53.6	-0.0031	.5809	.1114	+25	-39
Anonymous	6½	+3.96	-12.5	-21 44.0	7 5 14.1	- 3 12.5	+0.6473	.5874	-.0944	+64	- 2
B. A. C. 5278	6	4.07	10.5	21 8.5	13 6.1	+ 4 21.1	-0.6277	.5935	.0768	-12	-86
B. A. C. 5281	6	4.06	10.3	20 38.4	13 17.6	+ 4 32.1	-1.1495	.5937	.0764	-49	-90
δ Scorpii	2½	4.11	10.5	22 17.0	14 18.8	+ 5 30.9	+0.4379	.5945	.0739	+47	-14
B. A. C. 5395	6	4.17	9.1	21 5.9	19 33.9	+10 33.6	-1.1120	.5982	.0612	-46	-90
O. Arg. S., 15466	7	+4.16	- 8.7	-21 0.5	20 50.8	+11 47.4	-1.2767	.5990	-.0579	-67	-90
ρ Ophiuchi, mult.	5	4.26	8.4	23 10.4	8 0 8.1	- 9 53.2	+0.7266	.6010	.0495	+67	+ 3
22 Ophiuchi	6½	4.40	5.2	23 19.0	11 18.5	+ 1 39.8	+0.4771	.6069	.0199	+45	-12
24 Ophiuchi	6½	4.39	5.0	22 57.7	12 3.2	+ 2 22.6	+0.1086	.6069	-.0179	+22	-33
39 Ophiuchi, mult.	6	4.50	3.0	24 9.3	20 0.8	+10 0.4	+1.2394	.6106	+0.039	+66	+51
B. A. C. 5831	6	+4.49	- 3.2	-23 56.5	20 2.9	+10 2.4	+1.0264	.6106	+0.040	+66	+25
B. A. C. 5862	7	4.50	2.2	23 43.9	22 16.8	-11 49.3	+0.8326	.6113	.0101	+67	+10
B. A. C. 5868	6½	4.52	2.3	24 8.0	22 39.7	-11 27.3	+1.2362	.6114	.0112	+66	+50
δ Ophiuchi, var.	5	4.52	2.1	24 3.9	23 8.3	-11 0.0	+1.1733	.6116	.0126	+66	+40
ϵ Ophiuchi	5	4.52	1.5	23 52.2	9 1 1.5	- 9 11.5	+1.0065	.6120	.0178	+67	+24
52 Ophiuchi	7	+4.47	- 0.9	-21 57.7	2 30.9	- 7 45.8	-0.8541	.6124	+0.0219	-31	-90
B. A. C. 5954	6	4.48	0.5	21 50.5	3 48.1	- 6 31.9	-0.9456	.6126	.0255	-36	-90
58 Ophiuchi	5	4.49	0.0	21 37.4	5 33.1	- 4 51.3	-1.1094	.6130	.0305	-48	-90
B. A. C. 5989	7	4.55	- 0.1	23 37.4	5 49.6	- 4 35.5	+0.8782	.6131	.0313	+67	+13
B. A. C. 5992	6½	4.50	+ 0.1	22 8.4	5 53.7	- 4 31.6	-0.5874	.6131	.0313	-14	-82
B. A. C. 6088	6	+4.57	+ 2.1	-22 46.6	12 23.5	+ 1 41.8	+0.3042	.6135	+0.0495	+36	-22
B. A. C. 6125	7	4.53	2.8	21 27.2	14 22.9	+ 3 36.2	-0.8952	.6136	.0550	-30	-90
Lalande 33210	6½	4.53	2.9	21 27.8	14 55.3	+ 4 7.2	-0.8551	.6136	.0566	-28	-90
μ Sagittarii	4	4.53	3.5	21 5.2	16 49.9	+ 5 57.0	-1.1130	.6136	.0617	-46	-90
14 Sagittarii	6½	4.56	3.5	21 44.5	17 0.4	+ 6 7.0	-0.4570	.6136	.0622	- 4	-70
B. A. C. 6222	6½	+4.60	+ 4.2	-22 58.4	19 52.5	+ 8 51.9	+0.9450	.6134	+0.0700	+67	+18
B. A. C. 6336	6½	4.57	6.0	21 29.6	10 1 48.7	- 9 26.9	-0.0480	.6128	.0860	+20	-42
B. A. C. 6347	6½	4.56	6.1	21 8.9	2 11.4	- 9 5.1	-0.3537	.6127	.0870	+ 4	-61
28 Sagittarii	6	4.61	6.8	22 30.8	4 56.5	- 6 26.8	+1.2345	.6122	.0943	+68	+47
O. Arg. S. 18672	6	4.54	7.0	20 24.0	5 33.3	- 5 51.6	-0.7805	.6121	.0958	-19	-90
29 Sagittarii	6	+4.54	+ 7.2	-20 27.4	6 13.6	- 5 13.0	-0.6604	.6119	+0.0976	-12	-90
30 Sagittarii	6	4.59	7.2	22 17.7	6 37.9	- 4 49.8	+1.1830	.6118	.0986	+68	+39
31 Sagittarii	6	4.58	7.5	22 3.4	7 7.2	- 4 21.7	+0.9084	.6117	.0999	+68	+21
33 Sagittarii	6	4.57	7.7	21 30.1	7 49.8	- 3 40.9	+0.5246	.6116	.1018	+55	-10
ζ Sagittarii	6	4.55	8.1	20 48.5	9 5.8	- 2 28.0	-0.0248	.6112	.1049	+23	-40
ϵ Sagittarii	4	+4.56	+ 8.1	-21 15.6	9 13.9	- 2 20.2	+0.4318	.6112	+0.1052	+49	-15
Lalande 35497	6½	4.50	8.7	19 24.8	11 16.4	- 0 22.8	-1.1574	.6104	.1104	-46	-90
B. A. C. 6536	6	4.50	9.2	19 28.4	13 14.2	+ 1 30.0	-0.8774	.6098	.1153	-24	-90
B. A. C. 6539	6	4.55	9.2	21 10.2	13 18.8	+ 1 34.4	+0.7950	.6098	.1155	+69	+ 7
π Sagittarii	3	4.56	9.3	21 12.5	13 45.8	+ 2 0.3	+0.8849	.6096	.1166	+69	+13
δ Sagittarii	5	+4.49	+10.2	-19 9.6	16 46.7	+ 4 53.8	-0.7593	.6084	+0.1240	-15	-90
ρ Sagittarii	5½	4.48	10.6	18 31.4	18 23.0	+ 6 26.1	-1.1795	.6077	.1278	-46	-90
B. A. C. 6658	6	4.48	11.1	18 35.7	20 45.5	+ 8 42.8	-0.7992	.6067	.1335	-17	-90
Lalande 36857	6½	4.50	11.5	18 37.9	22 7.2	+10 1.1	+0.3987	.6061	.1366	+50	-16
57 Sagittarii	5½	4.48	13.4	19 20.5	11 6 0.0	- 6 25.5	+1.2610	.6022	.1539	+71	+47
B. A. C. 6992	6½	4.30	15.9	15 9.3	17 14.2	+ 4 21.8	-0.9788	.5956	.1758	-24	-90
β Capricorni	3	+4.30	+15.9	-15 9.1	17 19.7	+ 4 27.1	-0.9657	.5955	+0.1760	-23	-90
B. A. C. 7063	6	4.28	16.8	15 26.9	21 19.3	+ 8 17.2	+0.0413	.5931	.1830	+34	-37
B. A. C. 7087	6	4.25	16.9	14 7.5	22 35.0	+ 9 30.1	-1.0207	.5923	.1853	-29	-90
γ Capricorni	6	4.27	17.3	15 33.2	23 49.4	+10 41.6	+0.6081	.5915	.1873	+69	- 6
τ Capricorni	5	4.26	17.4	15 22.0	19 0 35.9	+11 26.2	+0.5709	.5911	.1886	+68	- 8
B. A. C. 7221	6½	+4.18	+18.0	-12 58.7	5 14.1	- 8 6.3	-0.8770	.5881	+0.1957	-15	-90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.

July.

STAR'S—				AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0. Δα Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N'n.	S'n.
8 Aquarii	6	+4.16 +18.7	-13 30.4	12 8 59.1	-4 29.9	+0.3836	.5858	+2010	+56	-18
9 Aquarii	6	4.16 18.8	13 59.3	9 28.6	-4 1.5	+0.9550	.5854	.2017	+76	+15
γ Aquarii	4½	4.09 19.1	11 50.8	12 58.2	-0 39.9	-0.4328	.5831	.2062	+12	-66
17 Aquarii	6	4.02 19.6	9 49.2	18 31.9	+4 41.3	-1.2601	.5796	.2127	-44	-90
19 Aquarii	6	4.02 19.9	10 14.9	19 28.6	+5 35.8	-0.6383	.5790	.2136	+2	-84
ε Aquarii	4½	+3.95 +20.1	-8 22.9	13 0 45.4	+10 40.9	-1.3348	.5759	+2189	-55	-90
B. A. C. 7562	6½	3.95 20.8	9 34.6	3 47.0	-10 24.1	+0.5105	.5740	.2216	+68	-12
α Capricorni	6	3.95 20.8	9 37.3	3 49.3	-10 21.9	+0.5636	.5740	.2216	+72	-9
α Capricorni	6	3.95 21.0	9 49.1	4 21.5	-9 50.9	+0.8760	.5737	.2222	+80	+9
30 Aquarii	5½	3.84 21.2	7 5.5	11 40.2	-2 48.1	-0.1740	.5694	.2273	+28	-49
B. A. C. 7744	6	+3.78 +21.1	-5 18.1	15 47.2	+1 10.2	-1.0055	.5670	+2295	-19	-90
44 Aquarii	6	3.77 21.4	5 58.5	17 41.3	+3 0.1	+0.0978	.5659	.2305	+43	-34
51 Aquarii	6	3.74 21.5	5 26.0	20 45.5	+5 57.8	+0.2697	.5643	.2318	+54	-24
κ Aquarii	5	3.68 21.9	4 50.1	14 2 47.2	+11 46.8	+1.0809	.5615	.2336	+55	+23
3 Piscium	6	3.55 21.0	-0 26.8	13 1.5	-2 20.1	-0.9061	.5569	.2346	-11	-90
κ Piscium	4½	+3.43 +21.1	+0 36.6	15 0 56.8	+9 10.8	+0.8196	.5526	+2328	+90	+6
9 Piscium	6	3.43 21.1	0 28.5	1 5.6	+9 19.3	+0.9901	.5525	.2327	+90	+17
Yarnall 10387	7	3.42 20.7	1 42.9	2 51.6	+11 1.7	+0.1488	.5520	.2322	+47	-31
16 Piscium	6	3.39 20.9	1 26.9	5 17.3	-10 37.5	+0.9822	.5513	.2313	+90	+16
19 Piscium	6	3.35 20.3	2 49.9	9 52.7	-6 11.3	+0.6394	.5502	.2294	+82	-5
36 Piscium	6½	+3.24 +18.6	+7 35.1	23 49.4	+7 17.6	-1.0641	.5473	+2208	-22	-83
d Piscium	5½	3.22 18.6	7 32.1	16 1 41.6	+9 6.0	-0.6020	.5471	.2194	+7	-76
45 Piscium	6	3.20 18.8	7 2.3	4 3.5	+11 23.2	+0.4236	.5468	.2176	+65	-15
75 Piscium	6½	3.06 15.9	12 19.3	23 3.1	+5 45.1	-1.0720	.5461	.1990	-24	-78
101 Piscium	6	2.95 14.2	14 3.4	17 12 37.3	-5 7.5	-0.2976	.5466	.1823	+23	-50
104 Piscium	6½	+2.94 +14.3	+13 41.2	14 14.2	-3 33.7	+0.3831	.5467	+1801	+62	-13
B. A. C. 524	6½	2.94 13.6	15 10.9	15 42.3	-2 8.6	-0.9224	.5468	.1782	-14	-75
27 Arietis	6	2.76 10.9	17 10.8	18 14 3.9	-4 31.6	+0.5772	.5491	.1440	+79	+2
B. A. C. 782	6½	2.78 10.4	18 21.5	15 17.2	-3 20.7	-0.5011	.5493	.1420	+11	-59
μ Arietis	5½	2.76 9.6	19 30.4	19 17.6	+0 31.4	-1.1700	.5499	.1352	-35	-71
40 Arietis	6	+2.70 +9.8	+17 47.5	22 8.7	+3 17.0	+1.0387	.5502	+1305	+90	+32
47 Arietis	6	2.71 8.6	20 11.6	19 2 28.0	+7 27.6	-0.9817	.5507	.1228	-19	-70
δ Arietis	4½	2.62 8.1	19 16.7	8 40.3	-10 32.6	+0.7251	.5515	.1115	+90	+14
ζ Arietis	4½	2.62 7.4	20 36.3	10 9.1	-9 6.8	-0.5369	.5518	.1087	+9	-58
B. A. C. 1032	6½	2.59 7.4	20 4.8	12 52.4	-6 29.0	+0.3171	.5521	.1037	+59	-8
τ¹ Arietis	5	+2.61 +7.2	+20 43.1	13 1.6	-6 20.1	-0.3554	.5521	+1033	+19	-45
τ² Arietis	6	2.60 7.3	20 19.1	13 44.0	-5 39.1	+0.1474	.5522	.1021	+48	-17
65 Arietis	6	2.59 7.3	20 22.9	14 29.6	-4 55.1	+0.1564	.5523	.1006	+48	-16
B. A. C. 1143	6	2.52 6.0	20 33.1	23 35.8	+3 52.6	+0.8130	.5533	.0832	+90	+22
32 Tauri	6	2.50 4.9	22 8.2	20 5 11.5	+9 16.9	-0.4679	.5537	.0719	+13	-49
33 Tauri	6	+2.51 +4.8	+22 49.8	5 16.1	+9 21.3	-1.2148	.5537	+0718	-44	-67
Α¹ Tauri	4½	2.45 4.5	21 45.4	8 44.8	-11 17.0	+0.1870	.5540	.0650	+50	-11
Α² Tauri	6	2.44 4.5	21 41.3	9 2.0	-11 0.4	+0.2793	.5540	.0645	+56	-6
B. A. C. 1281	6	2.43 4.0	22 6.5	12 26.8	-7 42.5	+0.0308	.5541	.0576	+41	-19
51 Tauri	7	2.39 3.9	21 17.3	14 58.0	-5 16.5	+1.0622	.5542	.0526	+90	+42
56 Tauri	6½	+2.38 +3.7	+21 29.2	15 31.3	-4 44.3	+0.8766	.5542	+0514	+90	+29
α¹ Tauri	5½	2.38 3.3	22 1.3	18 6.8	-2 14.1	+0.4204	.5542	.0461	+67	+3
α² Tauri	6½	2.38 3.3	21 55.7	18 8.4	-2 12.6	+0.5228	.5542	.0461	+75	+9
ν¹ Tauri	4½	2.38 3.2	22 32.6	18 31.8	-1 49.9	-0.1293	.5542	.0453	+32	-26
ν² Tauri	6	2.39 3.0	22 43.6	18 59.0	-1 23.6	-0.3088	.5542	.0444	+21	-37
B. A. C. 1373	7	2.36 3.2	21 21.4	19 19.9	-1 3.5	+1.2001	.5542	.0437	+90	+56
Runk. 1250	6½	+2.33 +2.2	+22 42.8	21 1 44.8	+5 8.4	-0.0425	.5542	+0305	+36	-20
τ Tauri	4½	2.33 2.2	22 43.7	1 45.9	+5 9.5	-0.0574	.5542	.0304	+36	-21
99 Tauri	6½	2.29 1.1	23 45.7	8 49.1	+11 58.4	-1.0264	.5538	+0159	-25	-67
π Tauri	6	2.18 +0.3	21 58.4	18 39.1	-2 31.6	+0.9924	.5526	-0043	+90	+41
ο Tauri	6	2.16 -0.1	21 50.0	22 20.1	+1 10.7	+1.1148	.5521	.0121	+90	+50
B. A. C. 1774	6½	+2.15 -1.0	+23 15.2	22 3 47.1	+6 18.0	-0.5384	.5512	-0228	+8	-50

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

July.

STAR'S—					AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.	
		$\Delta\alpha$	$\Delta\delta$		d h m	h m						
B. A. C. 1801	6	+2.14	- 1.3	+23 6.8	22 5 39.8	+ 8 7.0	-0.4686	.5509	-.0266	+12	-46	
141 Tauri	6	2.06	2.0	22 23.7	14 10.9	- 7 38.9	+0.0616	.5491	.0435	+43	-16	
1 Geminorum	5	2.07	2.3	23 16.0	15 17.2	- 6 34.8	-0.9504	.5488	.0457	-18	-67	
B. A. C. 1970	6½	2.04	2.4	22 12.5	17 50.1	- 4 7.0	+0.0963	.5482	.0507	+45	-15	
3 Geminorum	6	2.06	2.6	23 7.8	17 54.3	- 4 2.9	-0.9253	.5482	.0508	-17	-67	
6 Geminorum	6	+2.04	- 2.6	+22 56.0	19 6.8	- 2 52.8	-0.7700	.5478	-.0531	- 6	-67	
7 Geminorum	3½	2.03	2.7	22 32.3	20 19.5	- 1 42.5	-0.4009	.5475	.0554	+16	-44	
B. A. C. 2039	6½	1.99	2.8	21 15.1	23 23.5	+ 1 15.4	+0.8447	.5467	.0613	+90	+26	
μ Geminorum	3	2.00	3.1	22 34.3	23 0 6.1	+ 1 56.6	-0.6605	.5465	.0626	+ 1	-63	
15 Geminor., mult.	6	1.97	3.0	20 51.6	2 24.9	+ 4 10.8	+1.0837	.5459	.0669	+90	+42	
ζ Geminorum	6	+1.94	- 4.3	+21 54.0	13 39.4	- 8 56.6	-0.9352	.5424	-.0874	-17	-68	
δ Geminor., mult.	4	1.89	4.8	20 44.5	19 42.2	- 3 5.4	-0.2126	.5404	.0979	+27	-36	
α Leonis	3½	1.71	10.6	10 25.8	27 3 52.5	+ 2 40.4	-1.0590	.5127	.1956	-22	-80	
Weisse IX, 1035	7	1.77	11.7	8 14.3	11 49.3	+10 23.6	-0.2006	.5111	.2007	+28	-48	
B. A. C. 3407	6	1.72	11.0	8 52.7	13 0.1	+11 32.4	-1.1471	.5109	.2014	-29	-81	
π Leonis	5	+1.73	-11.1	+ 8 36.7	14 8.0	-11 21.5	-1.0787	.5107	-.2020	-23	-82	
14 Sextantis	6	1.72	11.6	6 11.3	17 42.7	- 7 52.9	+0.8814	.5101	.2039	+90	+11	
16 Sextantis	6	1.73	11.8	6 45.0	19 1.9	- 6 35.9	-0.0117	.5099	.2046	+38	-38	
19 Sextantis	6	1.73	11.9	5 11.9	20 58.6	- 4 42.5	+1.3080	.5096	.2055	+90	+48	
Weisse X, 315	6½	1.76	12.3	4 32.0	28 4 12.4	+ 2 19.1	+0.5464	.5086	.2085	+74	- 9	
34 Sextantis	6	+1.81	-12.6	+ 4 12.0	13 9.1	+11 0.8	-0.9645	.5091	-.2114	-15	-86	
36 Sextantis	6	1.81	12.9	3 6.6	14 32.0	-11 38.7	-0.0524	.5081	.2117	+36	-42	
B. A. C. 3726	6	1.83	13.4	1 39.3	18 22.7	- 7 54.3	+0.7370	.5081	.2128	+90	+ 1	
55 Leonis	6	1.84	13.5	1 22.0	20 15.7	- 6 4.5	+0.6536	.5081	.2130	+84	- 4	
p ² Leonis	6	1.87	13.6	+ 0 38.2	29 0 33.7	- 1 53.9	+0.5417	.5083	.2136	+74	-10	
p ⁴ Leonis	7	+1.88	-14.0	- 1 41.6	3 36.8	+ 1 4.1	+1.3521	.5085	-.2138	+90	+54	
p ⁵ Leonis	5	1.90	13.8	+ 0 34.4	6 3.1	+ 3 26.3	-0.5643	.5087	.2140	+ 9	-75	
B. A. C. 3901	6	1.95	14.2	- 1 3.0	13 41.1	+10 51.4	-0.4129	.5097	.2139	+17	-64	
B. A. C. 3903	6	1.95	14.0	0 14.9	13 46.0	+10 56.2	-1.3104	.5097	.2138	-46	-90	
e Leonis	5	1.96	14.6	2 21.1	14 59.0	-11 52.9	+0.7369	.5099	.2138	+85	+ 1	
B. A. C. 3955	5½	+1.99	-14.4	- 1 46.9	19 19.6	- 7 39.7	-0.8143	.5107	-.2133	- 6	-90	
B. A. C. 4006	6	2.05	15.2	4 40.6	30 2 4.5	- 1 6.3	+0.9173	.5122	.2121	+86	+12	
B. A. C. 4063	6½	2.11	15.2	4 49.2	8 43.6	+ 5 21.4	-0.3329	.5141	.2103	+20	-58	
B. A. C. 4201	6½	2.25	15.8	8 1.3	21 27.4	- 6 17.1	+0.5019	.5187	.2050	+68	-12	
γ Virginis	6	2.30	16.0	8 48.0	31 0 27.6	- 3 22.2	+0.7313	.5198	.2035	+81	+ 1	
Rumk. 4137	7	+2.36	-15.7	- 8 34.4	8 14.4	+ 4 10.7	-1.0777	.5233	-.1989	-26	-90	
B. A. C. 4312	6½	2.38	16.0	9 41.7	9 26.3	+ 5 20.5	-0.1052	.5238	.1981	+30	-45	
ψ Virginis	5	2.39	15.7	8 53.8	10 56.7	+ 6 48.1	-1.2630	.5247	.1970	-44	-90	
g Virginis	6	+2.48	-15.7	10 6.5	17 43.3	-10 37.6	-1.2720	.5287	-.1916	-46	-90	

August.

i Virginis	5	+2.62	-15.8	-12 5.6	1 2 59.0	- 1 39.3	-0.8760	.5342	-.1833	-14	-90
B. A. C. 4531	6	2.67	15.7	12 36.5	6 50.0	+ 2 4.5	-1.0209	.5356	.1794	-25	-90
83 Virginis	6	2.78	16.2	15 35.1	11 30.4	+ 6 35.9	+1.3253	.5396	.1744	+75	+58
85 Virginis	6	2.79	16.1	15 10.5	12 2.0	+ 7 6.5	+0.7961	.5401	.1737	+75	+ 6
B. A. C. 4700	5½	2.96	15.0	15 44.6	23 51.6	- 5 27.1	-0.5705	.5486	.1668	+ 1	-78
B. A. C. 4722	6	+3.03	-15.5	-17 38.9	2 1 56.5	- 3 26.3	+1.1151	.5501	-.1641	+73	+29
ι Libræ	4½	3.44	12.8	19 20.6	3 3 5.5	- 3 9.9	-0.5432	.5691	.1147	- 3	-76
λ Libræ	6½	3.44	12.6	19 12.1	3 33.9	- 2 42.5	-0.7442	.5695	.1139	-15	-90
O. Arg. S., 14428	6½	3.49	12.7	20 17.2	5 28.5	- 0 52.1	+0.1684	.5711	.1101	+35	-29
Anonymous	6½	3.69	11.8	21 44.0	13 43.8	+ 7 5.1	+0.8216	.5788	.0893	+68	+ 9
B. A. C. 5278	6	+3.80	-9.9	-21 8.5	21 51.7	- 9 5.4	-0.4794	.5833	-.0769	- 4	-71
B. A. C. 5281	6	3.80	9.6	20 38.4	22 3.7	- 8 53.8	-1.0095	.5834	.0754	-37	-90
δ Scorpæ	2½	3.85	10.0	22 17.1	23 6.9	- 7 53.1	+0.6011	.5841	.0730	+59	- 9
B. A. C. 5395	6	3.91	8.4	21 5.8	4 4 32.5	- 2 39.8	-0.9774	.5878	.0607	-35	-90
O. Arg. S., 15466	7	+3.92	-8.2	-21 0.5	5 51.9	- 1 23.5	-1.1452	.5887	-.0576	-49	-90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.

August.

STAR'S—				AT CONJUNCTION IN R. A.					Limiting Parallels	
Name.	Mag.	Red'ns from 1881.0. $\Delta\alpha$ $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N.n.	S.n.
ρ Ophiuchi, <i>mult.</i>	5	+4.03 - 8.1	-23° 10.4	^d 9 15.8	+ 1 52.5	+0.8823	.5908	-.0495	+67°	+14°
α Ophiuchi	5	4.00 6.8	21 12.7	11 54.2	+ 4 24.6	-1.2374	.5924	.0431	-61°	-90°
22 Ophiuchi	6 $\frac{1}{2}$	4.20 5.3	23 19.0	20 47.6	-11 3.0	+0.6162	.5974	.0207	+56°	- 4°
24 Ophiuchi	6 $\frac{1}{2}$	4.20 5.1	22 57.7	21 33.7	-10 18.8	+0.2416	.5977	-.0187	+30°	-25°
B. A. C. 5831	6	4.34 3.3	23 56.5	5 5 47.8	- 2 24.6	+1.1601	.6021	+0.0027	+66°	+39°
B. A. C. 5862	7	+4.37 - 2.3	-23 43.9	8 5.6	- 0 12.4	+0.9605	.6013	+0.0088	+67°	+19°
α Ophiuchi	5	4.41 1.7	23 52.2	10 54.9	+ 2 30.0	+1.1329	.6031	.0162	+66°	+35°
52 Ophiuchi	7	4.36 0.8	21 57.7	12 26.9	+ 3 58.2	-0.7519	.6035	.0203	-25°	-90°
B. A. C. 5954	6	4.37 - 0.4	21 50.5	13 46.0	+ 5 14.1	-0.8435	.6038	.0238	-31°	-90°
58 Ophiuchi	5	4.38 + 0.1	21 37.4	15 33.9	+ 6 57.6	-1.0144	.6043	.0286	-41°	-90°
B. A. C. 5989	7	+4.47 - 0.2	-23 37.4	15 50.8	+ 7 13.8	+0.9949	.6043	+0.0294	+67°	+22°
B. A. C. 5992	6 $\frac{1}{2}$	4.41 + 0.1	22 8.4	15 55.1	+ 7 18.0	-0.4866	.6044	.0296	- 9°	-72°
B. A. C. 6088	6	4.51 1.8	22 46.6	22 34.6	-10 18.9	+0.4048	.6057	.0473	+43°	-16°
B. A. C. 6125	7	4.48 2.7	21 27.2	6 0 36.8	- 8 21.8	-0.8100	.6060	.0525	-25°	-90°
Lalande 33210	6 $\frac{1}{2}$	4.49 2.9	21 27.8	1 10.0	- 7 50.0	-0.7704	.6060	.0542	-23°	-90°
μ Sagittarii	4	+4.50 + 3.6	-21 5.2	3 7.2	- 5 57.5	-1.0332	.6063	+0.0594	-40°	-90°
14 Sagittarii	6 $\frac{1}{2}$	4.53 3.5	21 44.5	3 18.0	- 5 47.2	-0.3715	.6063	.0599	0°	-63°
B. A. C. 6222	6 $\frac{1}{2}$	4.60 4.0	22 58.4	6 13.8	- 2 58.6	+1.0387	.6066	.0676	+67°	+25°
21 Sagittarii	5	4.53 5.1	20 36.1	7 31.8	- 1 43.8	-1.2252	.6066	.0710	-57°	-90°
B. A. C. 6336	6 $\frac{1}{2}$	4.61 6.3	21 29.6	12 17.1	+ 2 49.7	+0.0270	.6066	.0835	+24°	-37°
B. A. C. 6347	6 $\frac{1}{2}$	+4.59 + 6.5	-21 8.9	12 40.2	+ 3 11.8	-0.2815	.6066	+0.0844	+ 7°	-56°
O. Arg. S., 18672	6	4.59 7.5	20 24.0	16 5.7	+ 6 28.9	-0.7175	.6064	.0932	-16°	-90°
20 Sagittarii	6	4.59 7.7	20 27.4	16 46.6	+ 7 8.1	-0.5971	.6063	.0949	- 9°	-82°
30 Sagittarii	6	4.65 7.5	22 17.7	17 11.3	+ 7 31.8	+1.2589	.6063	.0960	+68°	+52°
31 Sagittarii	6	4.65 7.6	22 3.4	17 41.1	+ 8 0.3	+1.0715	.6062	.0972	+68°	+28°
33 Sagittarii	6	+4.64 + 8.0	-21 30.1	18 24.4	+ 8 41.9	+0.5934	.6062	+0.0992	+60°	- 5°
ϵ Sagittarii	6	4.62 8.4	20 48.5	19 41.5	+ 9 55.9	+0.0378	.6060	.1024	+26°	-37°
ϵ Sagittarii	4	4.63 8.4	21 15.6	19 49.8	+10 3.8	+0.4972	.6060	.1026	+54°	-11°
Lalande 35497	6 $\frac{1}{2}$	4.60 9.3	19 24.8	21 54.1	-11 57.0	-1.1054	.6058	.1079	-41°	-90°
Lalande 35499	6	4.59 9.3	19 16.2	21 55.4	-11 55.8	-1.2437	.6058	.1079	-56°	-90°
B. A. C. 6536	6	+4.61 + 9.7	-19 28.3	23 53.5	-10 2.5	-0.8268	.6055	+1.128	-21°	-90°
B. A. C. 6539	6	4.66 9.4	21 10.2	23 58.2	- 9 58.0	+0.8553	.6055	.1129	+69°	+11°
π Sagittarii	3	4.66 9.6	21 12.5	7 0 25.6	- 9 31.7	+0.9450	.6054	.1140	+69°	+17°
d Sagittarii	5	4.61 10.7	19 9.6	3 28.7	+ 6 36.0	-0.7137	.6048	.1213	-13°	-90°
ρ Sagittarii	5 $\frac{1}{2}$	4.60 11.3	18 31.4	5 6.1	- 5 2.6	-1.1387	.6043	.1253	-42°	-90°
B. A. C. 6658	6	+4.62 +12.0	-18 35.7	7 30.1	- 2 44.4	-0.7608	.6036	+1.1309	-15°	-90°
Lalande 36857	6 $\frac{1}{2}$	4.65 12.2	19 37.9	8 52.6	- 1 25.3	+0.4399	.6032	.1340	+52°	-14°
57 Sagittarii	5 $\frac{1}{2}$	4.66 14.3	19 20.5	16 48.8	+ 6 11.6	+1.2885	.6006	.1517	+71°	+54°
B. A. C. 6992	6 $\frac{1}{2}$	4.57 17.4	15 9.2	8 4 4.5	- 6 59.7	-0.9774	.5964	.1741	-24°	-90°
β Capricorni	3	4.57 17.4	15 9.0	4 10.0	- 6 54.4	-0.9642	.5964	.1743	-23°	-90°
B. A. C. 7063	6	+4.56 +18.3	-15 26.8	8 9.2	- 3 4.6	+0.0345	.5946	+1.1815	+34°	-37°
B. A. C. 7087	6	4.53 18.5	14 7.4	9 24.6	- 1 52.1	-1.0297	.5941	.1837	-27°	-90°
γ Capricorni	6	4.56 18.9	15 33.2	10 38.7	- 0 41.0	+0.5956	.5934	.1859	+69°	- 6°
γ Capricorni	5	4.55 19.0	15 22.0	11 25.0	+ 0 3.5	+0.5565	.5930	.1870	+66°	- 8°
B. A. C. 7221	6 $\frac{1}{2}$	4.50 19.9	12 58.7	16 1.7	+ 4 29.5	-0.8976	.5905	.1944	-16°	-90°
8 Aquarii	6	+4.50 +20.7	-13 30.3	19 45.0	+ 8 4.2	+0.3518	.5887	+2.000	+54°	-20°
9 Aquarii	6	4.51 20.8	13 59.2	20 14.2	+ 8 32.2	+0.9200	.5884	.2007	+76°	+13°
ν Aquarii	4 $\frac{1}{2}$	4.46 21.4	11 50.8	23 41.9	+11 51.9	-0.4699	.5868	.2054	+10°	-68°
17 Aquarii	6	4.41 22.3	9 49.2	9 5 11.7	- 6 50.7	-1.3041	.5841	.2123	-51°	-90°
19 Aquarii	6	4.43 22.4	10 14.8	6 7.6	- 5 56.9	-0.6873	.5836	.2134	- 1°	-89°
B. A. C. 7562	6 $\frac{1}{2}$	4.36 23.6	9 34.6	14 18.5	+ 1 55.6	+0.4374	.5797	.2217	+63°	-15°
ϵ Capricorni	6	+4.37 +23.6	9 37.3	14 20.6	+ 1 57.6	+0.4893	.5797	+2.218	+66°	-13°
ϵ Capricorni	6 $\frac{1}{2}$	4.37 23.8	9 49.1	14 52.3	+ 2 28.1	+0.7989	.5794	.2222	+80°	+ 5°
30 Aquarii	5 $\frac{1}{2}$	4.31 24.4	7 5.4	22 2.8	+ 9 22.7	-0.2583	.5760	.2270	+24°	-54°
B. A. C. 7744	6	4.27 24.7	5 19.0	10 2 4.9	-10 44.1	-1.0909	.5742	.2304	-25°	-90°
44 Aquarii	6	4.27 24.8	5 58.4	3 56.3	- 8 56.8	-0.0003	.5732	.2315	+38°	-39°
51 Aquarii	6	+4.25 +25.0	- 5 25.9	6 56.3	- 6 3.3	+0.1637	.5720	+2.329	+47°	-30°

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

August.

STAR'S—				AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0.	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	α'	y'	N'n.	S'n.		
		$\Delta\alpha$	$\Delta\delta$	δ	h	m			$^{\circ}$	$'$		
κ Aquarii	5	+4.22	+25.4	- 4 50.1	10	12 49.1	- 0 23.3	+0.9535	.5711	+ 2351	+85 +14	
3 Piscium	6	4.13	25.5	0 26.7		22 46.9	+ 9 13.3	-1.0292	.5657	.2366	-21 -90	
B. A. C. 8152	6½	4.06	25.7	- 0 21.4	11	8 50.8	- 5 4.0	+1.2607	.5626	.2355	+90 +40	
κ Piscium	4½	4.06	25.6	+ 0 36.7		10 21.4	- 3 36.6	+0.6549	.5622	.2351	+84 - 4	
9 Piscium	6	4.05	25.7	0 28.6		10 29.8	- 3 28.4	+0.8222	.5622	.2351	+90 + 6	
Yarnall 10387	7	+4.05	+25.4	1 43.0		12 12.6	- 1 49.3	-0.0100	.5618	+2346	+39 -39	
16 Piscium	6	4.03	25.5	1 27.0		14 33.8	+ 0 27.0	+0.8081	.5612	.2338	+90 + 5	
19 Piscium	6	4.01	25.2	2 50.0		19 0.7	+ 4 44.7	+0.4634	.5601	.2321	+67 -14	
36 Piscium	6½	3.93	23.8	7 35.2	12	8 30.6	- 6 13.4	-1.2348	.5574	.2236	-38 -83	
d Piscium	5½	3.92	23.7	7 32.2		10 19.1	- 4 28.6	-0.7816	.5571	.2221	- 4 -70	
45 Piscium	6	+3.90	+23.8	+ 7 2.4		12 36.5	- 2 15.9	+0.2261	.5568	+2204	+52 -25	
75 Piscium	6½	3.84	20.9	12 19.4	13	7 0.3	- 8 29.9	-1.2647	.5556	.2017	-43 -78	
101 Piscium	6	3.76	19.1	14 3.5		20 10.4	+ 4 13.3	-0.5103	.5550	.1846	+11 -64	
104 Piscium	6½	3.75	19.2	13 41.3		21 44.6	+ 5 44.3	+0.1601	.5550	.1824	+48 -25	
B. A. C. 524	6½	3.76	18.5	15 10.9		23 10.3	+ 7 7.0	-1.1280	.5551	.1804	-29 -75	
27 Arietis	6	+3.62	+15.2	+17 10.9	14	20 58.1	+ 4 10.2	+0.3465	.5555	+1457	+60 -11	
B. A. C. 782	6½	3.63	14.6	18 21.6		22 9.7	+ 5 19.4	-0.7191	.5558	.1437	- 2 -72	
40 Arietis	6	3.57	14.0	17 47.5	15	4 52.5	+11 48.3	+0.8035	.5561	.1317	+90 +16	
ρ^2 Arietis	6	3.52	13.4	17 51.1		8 8.6	- 9 2.3	+1.1628	.5563	.1258	+90 +44	
47 Arietis	6	3.58	12.4	20 11.6		9 6.8	- 8 6.1	-1.1945	.5563	.1240	-39 -70	
δ Arietis	4½	+3.50	+11.9	+19 16.7		15 11.8	- 2 13.7	+0.4945	.5566	+1127	+72 + 1	
ζ Arietis	4½	3.50	11.1	20 36.4		16 39.5	- 0 48.9	-0.7539	.5568	.1099	- 4 -70	
B. A. C. 1032	6½	3.48	10.9	20 4.8		19 20.2	+ 1 46.2	+0.0926	.5568	.1046	+44 -20	
γ^1 Arietis	5	3.49	10.7	20 43.2		19 29.3	+ 1 55.0	-0.5654	.5568	.1044	+ 6 -60	
γ^2 Arietis	6	3.47	10.7	20 19.1		20 10.7	+ 2 35.1	-0.0749	.5568	.1032	+34 -29	
65 Arietis	6	+3.47	+10.6	+20 23.0		20 55.8	+ 3 18.6	-0.0658	.5568	+1017	+35 -28	
B. A. C. 1143	6	3.39	9.1	20 33.1	16	5 54.1	+11 58.4	+0.5883	.5564	.0841	+81 + 9	
32 Tauri	6	3.37	7.7	22 8.2		11 25.8	- 6 41.3	-0.6790	.5563	.0720	0 -65	
A ¹ Tauri	4½	3.33	7.2	21 45.4		14 57.0	- 3 17.3	-0.0269	.5561	.0659	+37 -23	
A ² Tauri	6	3.32	7.2	21 41.4		15 14.0	- 3 0.9	+0.0650	.5561	.0654	+43 -18	
B. A. C. 1281	6	+3.30	+ 6.5	+22 16.6		18 36.7	+ 0 14.8	-0.3598	.5560	+0584	+18 -41	
51 Tauri	7	3.25	6.4	21 17.4		21 6.6	+ 2 39.6	+0.8459	.5559	.0533	+90 +27	
56 Tauri	6½	3.25	6.2	21 29.2		21 39.6	+ 3 11.5	+0.6622	.5558	.0522	+90 +16	
κ^1 Tauri	5½	3.24	5.6	22 1.3	17	0 13.8	+ 5 40.4	+0.2109	.5556	.0469	+52 - 8	
κ^2 Tauri	6½	3.23	5.6	21 55.7		0 15.4	+ 5 41.9	+0.3127	.5556	.0468	+59 - 3	
ν^1 Tauri	4½	+3.25	+ 5.4	+22 32.6		0 38.6	+ 6 4.4	-0.3348	.5556	+0461	+20 -39	
ν^2 Tauri	6	3.24	5.2	22 43.6		1 5.7	+ 6 30.5	-0.5129	.5556	.0451	+10 -50	
B. A. C. 1373	7	3.21	5.6	21 21.4		1 26.6	+ 6 50.7	+0.9865	.5556	.0445	+90 +37	
Rumk. 1250	6½	3.18	3.9	22 42.8		7 48.6	-11 0.4	-0.2432	.5551	.0314	+25 -32	
τ Tauri	4½	3.18	3.9	22 43.7		7 49.8	-10 59.3	-0.2580	.5549	.0312	+24 -32	
99 Tauri	6½	+3.13	+ 2.5	+23 45.7		14 50.7	- 4 12.6	-1.2165	.5546	+0168	-46 -66	
105 Tauri	6	3.02	2.5	21 32.9		19 29.2	+ 0 16.3	+1.2543	.5534	+0079	+90 +65	
π Tauri	6	2.98	1.6	21 58.4	18	0 38.8	+ 5 15.5	+0.8019	.5524	-0033	+90 +29	
σ Tauri	6	2.94	+ 1.0	21 50.1		4 28.2	+ 8 57.2	+0.9284	.5517	.0110	+90 +36	
B. A. C. 1774	6½	2.92	- 0.2	23 15.2		9 45.8	- 9 56.0	-0.7134	.5506	.0216	- 3 -66	
B. A. C. 1801	6	+2.89	- 0.4	+23 8.8		11 38.4	- 8 7.0	-0.6418	.5501	-0253	+ 2 -59	
141 Tauri	6	2.79	1.5	22 23.7		20 9.5	+ 0 7.0	-0.1034	.5480	.0421	+33 -25	
1 Geminorum	5	2.79	2.6	23 16.1		21 15.8	+ 1 11.1	-1.1115	.5477	.0442	-33 -67	
B. A. C. 1970	6½	2.75	2.6	22 12.5		23 48.8	+ 3 39.1	-0.0640	.5469	.0491	+35 -23	
3 Geminorum	6	2.76	2.4	23 7.8		23 53.1	+ 3 43.2	-1.0990	.5469	.0492	-31 -67	
6 Geminorum	6	2.75	2.5	22 56.0	19	1 5.6	+ 4 53.4	-0.9268	.5463	.0516	-17 -67	
η Geminorum	3½	+2.73	- 2.5	+22 32.3		2 18.4	+ 6 3.8	-0.5571	.5462	-0539	+ 7 -54	
B. A. C. 2039	6½	2.66	2.5	21 15.1		5 22.6	+ 9 1.9	+0.6893	.5453	.0596	+90 +17	
μ Geminorum	3	2.70	3.1	22 34.3		6 5.3	+ 9 43.2	-0.8116	.5451	.0610	- 8 -68	
15 Geminor., <i>mult.</i>	6	2.67	2.7	20 51.6		8 24.3	+11 57.7	+0.9319	.5445	.0653	+90 +31	
16 Geminorum	6	2.65	2.7	20 33.9		8 29.4	-11 57.4	+1.2523	.5444	.0655	+90 +63	
d Geminorum	6	+2.56	- 4.6	+21 54.0		19 39.9	- 1 8.6	-1.0671	.5410	-0856	-28 -68	

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.

August.

STAR'S—					AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	α'	γ'	N'n.	S'n.		
		$\Delta\alpha$	$\Delta\delta$		d h m	h m							
ζ Geminor., <i>mult.</i>	4	+2.48	- 5.0	+20 44.5	20 1 43.5	+ 4 43.3	-0.3365	.5389	-.0961	+20	-44		
Venus				20 58.4	7 40.9	+10 29.4	-1.1987	.4857	.1030	-40	-69		
56 Geminorum	5½	2.41	6.1	20 39.9	10 23.2	-10 53.5	-1.1472	.5359	.1104	-35	-70		
B. A. C. 2432	6½	2.37	5.6	18 29.9	10 59.6	-10 18.2	+1.1907	.5357	.1114	+90	+48		
61 Geminorum	6	2.39	6.3	20 29.5	12 49.6	- 8 31.7	-1.2289	.5351	.1143	-44	-70		
f Geminorum	6	+2.30	- 6.4	+17 56.5	19 3.5	- 2 29.3	+0.8604	.5330	-.1238	+90	+20		
g Geminorum	5½	2.29	7.0	18 47.8	22 20.2	+ 0 41.2	-0.5024	.5316	.1286	+11	-58		
3 Cancri	6	2.22	7.5	17 37.9	21 5 40.7	+ 7 48.3	-0.1905	.5290	.1391	+28	-40		
5 Cancri	6	2.19	7.4	16 46.8	6 3.2	+ 8 10.0	+0.7028	.5289	.1396	+90	+ 9		
B. A. C. 2731	6½	2.18	8.0	17 21.7	10 19.7	-11 41.3	-0.5531	.5275	.1454	+ 8	-63		
29 Cancri	6	+2.08	- 8.4	+14 36.0	19 50.7	- 2 27.4	+1.0747	.5244	-.1575	+90	+31		
B. A. C. 3031	6½	2.01	9.4	14 38.0	22 9 47.4	+11 4.5	-1.2677	.5201	.1730	-45	-76		
α Cancri	4	1.98	9.3	12 18.9	11 18.3	-11 27.3	+1.0445	.5196	.1746	+90	+26		
ρ^s Leonis	5	1.85	12.7	+ 0 34.5	25 11 41.4	+10 52.0	-0.4289	.5120	.2134	+16	-65		
B. A. C. 3901	6	1.87	13.0	- 1 3.0	19 16.2	- 5 46.1	-0.2635	.5129	.2134	+25	-54		
B. A. C. 3903	6	+1.87	-13.0	- 0 14.8	19 21.2	- 5 41.3	-1.1604	.5129	-.2134	-30	-90		
B. A. C. 3909	6	1.87	12.8	0 11.9	20 4.4	- 4 59.4	-1.3684	.5130	.2132	-60	-90		
ϵ Leonis	5	1.88	13.2	2 21.1	20 33.6	- 4 31.0	+0.8888	.5130	.2132	+88	+19		
B. A. C. 3955	5½	1.89	13.1	1 46.9	26 0 52.6	- 0 19.3	-0.6540	.5138	.2129	+ 3	-34		
B. A. C. 4006	6	1.92	13.6	4 40.6	7 35.0	+ 6 11.6	+1.0894	.5148	.2101	+86	+24		
B. A. C. 4063	6½	+1.96	-13.6	- 4 49.2	14 12.4	-11 22.4	-0.1497	.5170	-.2097	+30	-47		
B. A. C. 4201	6½	2.05	13.9	8 1.2	27 2 53.6	+ 0 56.4	+0.7058	.5209	.2044	+82	- 1		
q Virginis	6	2.07	14.1	8 48.0	5 53.5	+ 3 51.0	+0.9404	.5221	.2028	+81	+13		
χ Virginis	5	2.08	13.6	7 20.7	8 42.0	+ 6 34.6	-1.2056	.5232	.2011	-37	-90		
B. A. C. 4259	6	2.08	13.7	7 22.9	8 46.3	+ 6 38.7	-1.1792	.5232	.2011	-34	-90		
Rumk. 4137	7	+2.12	-13.8	- 8 34.4	13 40.0	+11 23.6	-0.8628	.5252	-.1979	-11	-90		
B. A. C. 4312	6½	2.14	14.0	9 41.6	14 52.0	-11 26.5	+0.1139	.5257	.1970	+42	-32		
ψ Virginis	5	2.15	13.7	8 53.8	16 22.4	- 9 58.9	-1.0454	.5263	.1980	-24	-90		
g Virginis	6	2.21	13.7	10 6.4	23 9.9	+ 3 23.8	-1.0474	.5294	.1906	-25	-90		
τ Virginis	5	2.31	13.9	12 5.5	28 8 27.9	+ 5 37.0	-0.6415	.5340	.1823	0	-84		
B. A. C. 4531	6	+2.36	-13.8	-12 36.5	12 20.5	+ 9 22.4	-0.7845	.5360	-.1781	- 9	-90		
85 Virginis	6	2.44	14.1	15 10.4	17 34.7	- 9 33.4	+1.0450	.5389	.1724	+75	+23		
B. A. C. 4679	6½	2.53	13.1	14 24.1	29 2 33.4	- 0 52.1	-1.2767	.5442	.1714	-53	-90		
B. A. C. 4700	5½	2.59	13.3	15 44.6	5 32.0	+ 2 0.7	-0.3213	.5461	.1575	+14	-58		
ι Libræ	4½	3.04	11.3	19 20.6	30 9 14.7	+ 4 46.9	-0.2896	.5637	.1134	+10	-56		
λ Libræ	6½	+3.04	-11.2	-19 12.1	9 43.8	+ 5 14.9	-0.4928	.5640	-.1126	+ 1	-71		
O. Arg. S., 14428	6½	3.10	11.3	20 17.2	11 41.0	+ 7 8.0	+0.4296	.5652	.1089	+50	-15		
Yarnall 6425	6½	3.26	10.5	21 44.0	20 8.7	- 8 42.4	+1.0892	.5706	.0923	+69	+29		
B. A. C. 5278	6	3.36	8.8	21 8.4	31 4 29.8	- 0 39.7	-0.2307	.5755	.0751	+10	-53		
B. A. C. 5281	6	3.36	8.6	20 38.3	4 42.1	- 0 27.9	-0.7676	.5756	.0746	-21	-90		
δ Scorpii	2½	3.42	9.0	22 17.0	5 47.1	+ 0 34.7	+0.8632	.5762	.0723	+68	+12		
ω^s Scorpii	4	+3.43	- 7.9	-20 32.9	8 46.1	+ 3 27.1	-1.1460	.5778	-.0659	-49	-90		
B. A. C. 5395	6	3.49	7.7	21 5.8	11 22.4	+ 5 57.6	-0.7391	.5792	.0601	-20	-90		
O. Arg. S., 15416	7	3.50	7.5	20 48.3	11 42.5	+ 6 17.1	-1.0615	.5794	.0593	-42	-90		
O. Arg. S., 15466	7	3.51	7.3	21 0.5	12 44.3	+ 7 16.4	-0.9101	.5799	.0570	-31	-90		
ρ Ophiuchi, <i>mult.</i>	5	3.62	7.4	23 10.4	16 14.5	+10 38.7	+1.1439	.5818	.0491	+67	+36		
ω Ophiuchi	5	+3.60	- 6.1	-21 12.7	18 58.1	-10 43.8	-1.0079	.5830	-.0428	-39	-90		

September.

22 Ophiuchi	6½	+3.79	- 4.9	-23 19.0	1 4 9.2	- 1 53.8	+0.8686	.5873	-.0210	+67	+13
24 Ophiuchi	6½	3.79	4.7	22 57.7	4 56.8	- 1 8.0	+0.4852	.5876	.0191	+46	-11
B. A. C. 5758	6	+3.81	- 3.2	-21 23.9	8 45.6	+ 2 31.8	-1.1717	.5892	-.0099	-56	-90
B. A. C. 5862	7	3.99	2.3	23 43.9	15 50.9	+ 9 20.6	+1.2056	.5916	+0.052	+67	+45
B. A. C. 5866	6	3.91	1.4	21 19.8	16 9.1	+ 9 38.1	-1.2431	.5917	.0085	-64	-90
52 Ophiuchi	7	3.99	0.5	21 57.7	20 21.5	-10 19.4	-0.5388	.5928	.0189	-12	-77
B. A. C. 5954	6	+4.01	- 0.2	-21 50.5	21 43.5	- 9 0.6	-0.6331	.5932	+0.023	-17	-87

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

September.

STAR'S—				AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0. Δα Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N'n.	S'n.
58 Ophiuchi	5	+4.03 + 0.4	-21° 37.4	^d 23 35.3	^h 7 13.2	-0.8091	5936	+0.269	-27	-90
B. A. C. 5989	7	4.09 - 0.2	23 37.4	23 52.8	- 6 56.3	+1.2325	5937	.0277	+67	+49
B. A. C. 5992	6½	4.04 + 0.3	22 8.4	23 57.2	- 6 52.1	-0.2733	5937	.0279	+ 3	-56
B. A. C. 6088	6	4.15 1.8	22 46.6	² 6 51.2	- 0 14.5	+0.6241	5939	.0453	+59	- 3
B. A. C. 6125	7	4.15 2.8	21 27.2	8 58.0	+ 1 47.3	-0.6131	5944	.0506	-14	-84
Lalande 33210	6½	+4.16 + 2.9	-21 27.8	9 32.2	+ 2 20.1	-0.5732	5945	+0.517	-12	-80
μ Sagittarii	4	4.17 3.6	21 5.2	11 33.7	+ 4 16.8	-0.8453	5956	.0571	-27	-90
14 Sagittarii	6½	4.19 3.4	21 44.5	11 44.9	+ 4 27.6	-0.1709	5956	.0576	+11	-49
15 Sagittarii	5	4.18 3.8	20 45.7	12 8.4	+ 4 50.1	-1.1392	5956	.0586	-49	-90
B. A. C. 6222	6½	4.27 3.5	22 58.4	14 47.0	+ 7 22.5	+1.2581	5958	.0650	+67	+54
21 Sagittarii	5	+4.22 + 4.9	-20 36.1	16 8.0	+ 8 40.3	-1.0416	5959	+0.685	-39	-90
B. A. C. 6336	6½	4.30 5.8	21 29.6	21 3.3	-10 36.2	+0.2789	5960	.0805	+45	-17
B. A. C. 6347	6½	4.29 6.0	21 8.9	21 27.3	-10 13.1	-0.0933	5961	.0815	+17	-45
B. A. C. 6376	6	4.28 7.3	19 43.6	³ 0 17.1	- 7 30.1	-1.2820	5960	.0883	-66	-90
O. Arg. S., 18672	6	4.30 7.2	20 24.0	1 0.0	- 6 48.9	-0.5413	5960	.0900	- 6	-76
29 Sagittarii	6	+4.32 + 7.2	-20 27.4	1 42.4	- 6 8.1	-0.4204	5960	+0.917	+ 1	-66
31 Sagittarii	6	4.37 7.1	22 3.4	2 38.7	- 5 14.1	+1.2720	5959	.0939	+68	+56
33 Sagittarii	6	4.36 7.4	21 30.1	3 23.6	- 4 31.0	+0.7863	5959	.0958	+69	+ 7
γ Sagittarii	6	4.36 7.9	20 48.5	4 43.4	- 3 14.3	+0.2200	5958	.0991	+36	-26
Yarnall 8035	6½	4.31 8.6	19 18.3	4 51.1	- 3 7.0	-1.2829	5958	.0993	-65	-90
α Sagittarii	4	+4.37 + 7.8	-21 15.6	4 51.9	- 3 6.2	+0.6863	5958	+0.993	+67	0
Lalande 35497	6½	4.33 9.3	19 24.8	7 0.4	- 1 2.7	-0.9450	5956	.1042	-29	-90
Lalande 35499	6	4.33 9.3	19 16.2	7 1.9	- 1 1.3	-1.0854	5956	.1044	-40	-90
B. A. C. 6536	6	4.35 9.7	19 28.3	9 4.0	+ 0 55.9	-0.6656	5954	.1091	-11	-90
B. A. C. 6539	6	4.40 9.2	21 10.2	9 8.8	+ 1 0.5	+1.0418	5954	.1094	+69	+25
π Sagittarii	3	+4.41 + 9.2	-21 12.5	9 37.0	+ 1 27.6	+1.1316	5953	+1.105	+69	+33
δ Sagittarii	5	4.38 10.7	19 9.6	12 46.3	+ 4 29.5	-0.5572	5947	.1176	- 4	-78
ρ Sagittarii	5½	4.38 11.3	18 31.4	14 26.8	+ 6 6.0	-0.9897	5944	.1214	-31	-90
B. A. C. 6658	6	4.40 11.9	18 35.7	16 55.4	+ 8 28.8	-0.6124	5940	.1270	- 6	-83
Lalande 36857	6½	4.45 11.9	19 37.9	18 20.6	+ 9 50.7	+0.6033	5937	.1300	+64	- 5
B. A. C. 6992	6½	+4.47 +17.5	-15 9.2	⁴ 14 5.1	+ 4 49.1	-0.8730	5887	+1.697	-17	-90
β Capricorni	3	4.47 17.5	15 9.1	14 10.8	+ 4 54.6	-0.8594	5887	.1698	-17	-90
B. A. C. 7063	6	4.50 18.4	15 26.8	18 15.7	+ 8 50.0	+0.1415	5874	.1770	+39	-31
B. A. C. 7087	6	4.48 18.9	14 7.4	19 32.9	+10 4.4	-0.9354	5870	.1792	-21	-90
γ Capricorni	6	4.52 18.6	15 33.2	20 48.7	+11 17.2	+0.7026	5866	.1813	+75	0
α Capricorni	5	+4.52 +19.0	-15 22.0	21 36.1	-11 57.2	+0.6615	5863	+1.1826	+73	- 2
B. A. C. 7221	6½	4.49 20.5	12 58.7	⁵ 2 18.6	- 7 25.5	-0.8187	5849	.1900	-12	-90
8 Aquarii	6	4.52 21.0	13 30.3	6 6.1	- 3 46.6	+0.4327	5837	.1957	+59	-15
9 Aquarii	6	4.54 20.9	13 59.3	6 35.9	- 3 18.0	+1.0065	5835	.1964	+76	+20
ν Aquarii	4½	4.48 22.2	11 50.8	10 7.1	+ 0 5.3	-0.4060	5822	.2014	+13	-63
17 Aquarii	6	+4.46 +23.4	- 9 49.2	15 41.9	+ 5 27.6	-1.2598	5804	+2.084	-45	-90
19 Aquarii	6	4.47 23.5	10 14.8	16 38.6	+ 6 22.2	-0.6415	5800	.2094	+ 1	-84
B. A. C. 7562	6½	4.48 24.7	9 34.6	⁶ 0 55.1	- 9 39.6	+0.4684	5775	.2183	+65	-13
ε Capricorni	6	4.48 24.7	9 37.3	0 57.3	- 9 37.5	+0.5206	5775	.2183	+68	-11
ε Capricorni	6½	4.49 24.8	9 49.1	1 29.2	- 9 6.8	+0.8305	5773	.2188	+80	+ 7
30 Aquarii	5½	+4.46 +26.0	- 7 5.4	8 43.0	- 2 8.9	-0.2520	5751	+2.249	+24	-53
B. A. C. 7744	6	4.45 26.6	5 18.0	12 46.2	+ 1 45.4	-1.0985	5738	.2276	-26	-90
44 Aquarii	6	4.45 26.7	5 58.4	14 37.9	+ 3 33.0	-0.0096	5733	.2288	+37	-39
51 Aquarii	6	4.45 27.1	5 25.9	17 38.1	+ 6 26.7	+0.1456	5723	.2304	+46	-31
κ Aquarii	5	4.46 27.5	4 50.0	23 30.9	-11 53.2	+0.9200	5708	.2330	+85	+12
3 Piscium	6	4.42 28.3	0 26.7	⁷ 9 26.5	- 2 18.9	-1.0894	5687	.2351	-25	-90
B. A. C. 8152	6½	+4.42 +28.5	- 0 21.3	19 25.3	+ 7 18.6	+1.1679	5668	+2.347	+90	+31
κ Piscium	4½	4.42 28.5	+ 0 36.8	20 54.8	+ 8 45.0	+0.5598	5666	.2344	+75	- 8
9 Piscium	6	4.42 28.5	0 28.7	21 3.1	+ 8 53.0	+0.7261	5665	.2344	+90	+ 1
Yarnall 10387	7	4.42 28.5	1 43.0	22 44.7	+10 31.0	-0.1075	5663	.2342	+33	-45
16 Piscium	6	4.41 28.5	1 27.0	⁸ 1 4.1	-11 14.6	+0.7004	5660	.2333	+90	- 1
19 Piscium	6	+4.41 +28.4	+ 2 50.1	5 27.4	- 7 0.6	+0.3455	5654	+2.317	+59	-20

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.

September.

Star's—				At Conjunction in R. A.					Limiting Parallels	
Name.	Mag.	Red'ns from 1881.0. $\Delta\alpha$ $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N'n.	S'n.
<i>d</i> Piscium	5½	+4.40 +27.6	+ 7 32.2	^{d h m} 8 20 29.8	+ 7 30.2	-0.9272	.5613	+2229	-13°	-83°
45 Piscium	6	4.39 27.5	7 2.5	22 44.4	+ 9 40.1	+0.0676	.5642	.2211	+42°	-33°
101 Piscium	6	4.39 23.6	14 3.5	10 5 33.1	- 8 36.0	-0.7216	.5641	.1860	- 1°	-76°
104 Piscium	6½	4.39 23.3	13 41.3	7 4.8	- 7 7.5	-0.0613	.5641	.1838	+35°	-37°
B. A. C. 524	6½	4.41 22.7	15 11.0	8 28.2	- 5 47.1	-1.3366	.5641	.1818	-67°	-75°
27 Arietis	6	+4.36 +19.1	+17 10.0	11 5 40.8	- 9 19.2	+0.0923	.5647	+1470	+44°	-24°
B. A. C. 782	6½	4.38 18.6	18 21.6	6 50.6	- 8 11.8	-0.9612	.5647	.1449	-18°	-72°
40 Arietis	6	4.33 17.6	17 47.6	13 22.7	- 1 53.6	+0.5364	.5647	.1329	+75°	+ 1°
ρ^2 Arietis	6	4.31 17.0	17 51.2	16 33.6	+ 1 10.6	+0.8876	.5646	.1270	+90°	+22°
σ^2 Arietis	6	4.30 17.1	17 33.2	16 49.4	+ 1 25.8	+1.2359	.5646	.1265	+90°	+52°
54 Arietis	6½	+4.28 +15.9	+18 20.5	22 1.9	+ 6 27.3	+1.0459	.5646	+1163	+90°	+35°
δ Arietis	4½	4.30 15.3	19 16.8	23 26.6	+ 7 49.0	+0.2235	.5646	.1136	+52°	-14°
ζ Arietis	4½	4.30 14.5	20 36.4	19 0 51.7	+ 9 11.1	-1.0113	.5645	.1109	-22°	-70°
B. A. C. 1032	6½	4.28 14.3	20 4.9	3 28.4	+11 42.2	-0.1763	.5644	.1056	+28°	-35°
τ^1 Arietis	5	4.30 14.0	20 43.2	3 37.2	+11 50.7	-0.8348	.5644	.1053	-10°	-70°
τ^2 Arietis	6	+4.28 +13.9	+20 19.2	4 18.0	-11 29.9	-0.3427	.5644	+1040	+19°	-44°
65 Arietis	6	4.28 13.9	20 23.0	5 1.8	-10 47.6	-0.3340	.5644	.1024	+20°	-44°
32 Tauri	6	4.22 10.3	22 8.2	19 11.9	+ 2 52.5	-0.9471	.5632	.0736	-18°	-68°
A ¹ Tauri	4½	4.17 9.7	21 45.5	22 38.4	+ 6 11.8	-0.3037	.5627	.0665	+21°	-38°
A ² Tauri	6	4.17 9.7	21 41.4	22 55.0	+ 6 27.7	-0.2132	.5627	.0659	+26°	-33°
B. A. C. 1289	7	+4.14 + 8.8	+22 6.6	13 2 13.6	+ 9 39.4	-0.4560	.5622	+0590	+13°	-47°
51 Tauri	7	4.10 8.4	21 17.4	4 40.5	-11 58.8	+0.5582	.5619	.0538	+78°	+10°
53 Tauri	6½	4.08 8.8	20 51.3	5 9.1	-11 31.2	+1.0495	.5618	.0528	+90°	+41°
56 Tauri	6½	4.10 8.4	21 29.2	5 13.0	-11 27.4	+0.3768	.5618	.0526	+63°	0°
κ^1 Tauri	5½	4.10 7.8	22 1.4	7 44.2	- 9 1.5	-0.0702	.5614	.0474	+35°	-23°
κ^2 Tauri	6½	+4.10 + 7.8	+21 55.8	7 45.7	- 9 0.1	+0.0304	.5614	+0473	+40°	-18°
ν^1 Tauri	4½	4.11 7.5	22 32.7	8 8.6	- 8 38.0	-0.6103	.5613	.0466	+ 4°	-58°
ν^2 Tauri	6	4.11 7.3	22 43.7	8 34.7	- 8 12.7	-0.7898	.5612	.0455	- 9°	-68°
B. A. C. 1373	7	4.07 7.7	21 21.5	8 55.4	- 7 52.8	+0.6971	.5612	.0449	+90°	+19°
Rumk. 1250	6½	4.05 5.9	22 42.9	15 10.9	- 1 50.4	-0.5199	.5601	.0318	+ 9°	-50°
τ Tauri	4½	+4.05 + 5.9	+22 43.7	15 12.0	- 1 49.4	-0.5350	.5601	+0317	+ 8°	-51°
ι Tauri	5	3.90 4.5	21 25.2	14 0 30.7	+ 7 10.0	+1.0822	.5581	.0117	+90°	+48°
105 Tauri	6	3.88 3.9	21 32.9	2 40.5	+ 9 15.3	+0.9652	.5575	+0077	+90°	+39°
π Tauri	6	3.85 2.9	21 58.4	7 45.8	- 9 49.9	+0.5177	.5561	-0029	+74°	+13°
σ Tauri	6	3.80 2.1	21 50.1	11 32.4	- 6 11.1	+0.6448	.5550	.0106	+89°	+19°
B. A. C. 1774	6½	+3.79 + 0.5	+23 15.2	16 46.4	- 1 7.7	-0.9824	.5534	-0211	-22°	-67°
B. A. C. 1801	6	3.74 + 0.2	23 8.8	18 37.8	+ 0 39.9	-0.9103	.5524	.0268	-16°	-67°
Mars			23 6.1	20 42.2	+ 2 30.1	-0.9264	.5320	.0314	-17°	-67°
141 Tauri	6	3.64 - 1.2	22 23.7	15 3 4.2	+ 8 49.2	-0.3719	.5501	.0415	+18°	-40°
B. A. C. 1970	6½	3.60 - 1.9	22 12.5	6 41.8	-11 40.4	-0.3310	.5488	.0484	+20°	-39°
6 Geminorum	6	+3.58 - 2.5	+22 56.0	7 58.0	-10 26.6	-1.1880	.5484	-0509	-42°	-67°
η Geminorum	3½	3.55 2.6	22 32.3	9 10.2	- 9 17.0	-0.8196	.5480	.0532	-10°	-68°
B. A. C. 2039	6½	3.49 2.7	21 15.1	12 13.2	- 6 19.9	+0.4223	.5467	.0589	+66°	+ 2°
μ Geminorum	3	3.52 3.2	22 34.3	12 55.6	- 5 38.9	-1.0705	.5465	.0603	-29°	-68°
15 Geminor., <i>mult.</i>	6	3.44 3.0	20 51.6	15 13.7	- 3 25.4	+0.6661	.5456	.0645	+90°	+15°
16 Geminorum	6	+3.44 - 2.8	+23 33.9	15 18.9	- 3 20.3	+0.9849	.5456	-0646	+90°	+35°
ν Geminorum	4½	3.42 2.9	20 17.1	15 47.8	- 2 52.5	+1.2615	.5454	.0656	+90°	+63°
ζ Geminor., <i>mult.</i>	4	3.23 6.0	20 44.5	16 8 28.6	-10 44.0	-0.5811	.5390	.0949	+ 6°	-60°
B. A. C. 2432	6½	3.09 6.6	18 29.9	17 43.5	- 1 46.6	+0.9508	.5352	.1098	+90°	+28°
<i>f</i> Geminorum	6	2.99 7.5	17 56.5	17 1 46.7	+ 6 1.3	+0.6327	.5323	.1221	+85°	+ 7°
<i>g</i> Geminorum	5½	2.97 8.3	18 47.8	5 3.4	+ 9 12.0	-0.7219	.5311	.1270	- 2°	-72°
3 Cancri	6	+2.86 - 8.8	+17 37.9	12 23.9	- 7 41.0	-0.4008	.5285	-1373	+16°	-52°
5 Cancri	6	2.83 8.7	16 46.8	12 46.5	- 7 19.2	+0.4907	.5283	.1378	+71°	- 3°
B. A. C. 2731	6½	2.80 9.3	17 21.7	17 2.9	- 3 10.6	-0.7554	.5265	.1443	- 4°	-73°
29 Cancri	6	2.66 9.7	14 36.1	18 2 33.9	+ 6 3.4	+0.9845	.5236	.1553	+90°	+18°
α Cancri	4	2.49 10.6	12 18.9	18 1.7	- 2 56.3	+0.8833	.5192	.1724	+90°	+16°
κ Cancri	5	+2.44 -10.8	+11 8.6	22 53.4	+ 1 46.9	+1.3323	.5181	-1771	+90°	+60°

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.

September.

STAR'S—				AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'n's from 1881.0. Δα Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N'n.	S'n.
B. A. C. 3122	6½	+2.44 -11.3	+12 2.7	18 23 56.3	+ 2 48.0	+0.1463	.5178	-.1782	+47	-26
♌ Leonis	6	2.34 11.5	9 34.3	19 9 48.5	-11 37.0	+1.0866	.5158	.1867	+90	+28
♌ Leonis	6	2.33 11.7	10 14.2	11 39.4	- 9 49.3	+0.0025	.5154	.1882	+39	-36
♌ Leonis	3½	2.30 12.2	10 25.8	16 32.2	- 5 4.9	-1.1387	.5144	.1918	-29	-80
Weisse IX, 1035	7	2.23 12.2	8 14.3	20 0 25.2	+ 2 34.5	-0.2480	.5134	.1971	+25	-51
B. A. C. 3407	6	+2.23 -12.4	+ 8 52.6	1 35.3	+ 3 42.6	-1.1849	.5133	-.1977	-33	-81
π Leonis	5	2.22 12.4	8 36.7	2 42.6	+ 4 48.0	-1.1128	.5133	.1984	-27	-82
14 Sextantis	6	2.18 12.1	6 11.3	6 15.4	+ 8 14.8	+0.8549	.5130	.2006	+90	+10
16 Sextantis	6	2.17 12.4	6 45.0	7 33.6	+ 9 30.8	-0.0273	.5130	.2013	+37	-39
19 Sextantis	6	2.15 12.2	5 11.9	9 29.0	+11 22.9	+1.2951	.5129	.2023	+90	+47
Weisse X, 315	6½	+2.12 -12.5	+ 4 32.0	16 37.9	- 5 40.4	+0.5696	.5128	-.2056	+76	- 7
34 Sextantis	6	2.09 12.8	4 12.0	21 1 27.7	+ 2 54.3	-0.8943	.5130	.2089	-11	-86
36 Sextantis	6	2.07 12.8	+ 3 6.6	2 49.4	+ 4 13.6	+0.0161	.5131	.2093	+40	-37
ι Virginis	6	2.17 12.3	-12 5.5	24 14 5.0	-10 58.5	-0.4767	.5387	.1817	+ 9	-69
B. A. C. 4531	6	2.20 12.2	12 36.5	17 54.9	- 7 15.9	-0.6123	.5408	.1777	0	-81
85 Virginis	6	+2.26 -12.4	-15 10.4	23 6.0	- 2 14.8	+1.2255	.5436	-.1721	+75	+40
B. A. C. 4679	6½	2.31 11.6	14 24.1	25 7 59.6	+ 6 21.6	-1.0809	.5485	.1612	-32	-90
B. A. C. 4700	5½	2.35 11.6	15 44.6	10 56.6	+ 9 12.6	-0.1226	.5502	.1571	+24	-45
B. A. C. 4896	6	2.54 10.1	17 17.8	26 5 26.4	+ 3 4.8	-1.1189	.5609	.1278	-39	-90
♐ Libræ	4½	2.67 9.7	19 20.6	14 31.4	+11 50.8	-0.0567	.5657	.1125	+23	-42
♐ Libræ	6½	+2.67 - 9.5	-19 12.1	15 0.5	-11 41.1	-0.2596	.5659	-.1117	+11	-54
O. Arg. S., 14428	6½	2.71 9.6	20 17.1	16 57.7	- 9 48.0	+0.6656	.5669	.1080	+67	- 1
B. A. C. 5109	6½	2.77 8.4	19 16.0	23 22.2	- 3 37.2	-1.0575	.5702	.0957	-38	-90
λ Libræ	5½	2.89 7.2	19 48.7	27 8 12.6	+ 4 54.0	-1.2482	.5744	.0776	-60	-90
B. A. C. 5278	6	2.94 7.4	21 8.4	9 49.4	+ 6 27.3	+0.0177	.5752	.0742	+23	-38
B. A. C. 5281	6	+2.94 - 7.2	-20 38.3	10 1.7	+ 6 39.1	-0.5214	.5753	-.0738	- 7	-75
♏ Scorpïi	2½	2.99 7.5	22 17.0	11 7.2	+ 7 42.3	+1.1169	.5758	.0714	+68	+33
ω¹ Scorpïi	4	2.97 6.5	20 20.8	13 52.8	+10 21.7	-1.0917	.5769	.0656	-44	-90
ω² Scorpïi	4½	2.98 6.4	20 32.9	14 7.4	+10 35.8	-0.8982	.5771	.0652	-30	-90
B. A. C. 5395	6	3.03 6.2	21 5.8	16 44.9	-10 52.5	-0.4891	.5782	.0592	- 6	-71
O. Arg. S., 15416	7	+3.04 - 6.1	-20 48.3	17 5.2	-10 33.0	-0.8330	.5783	-.0585	-25	-90
O. Arg. S., 15466	7	3.04 5.9	21 0.5	18 7.5	- 9 33.0	-0.6639	.5787	.0563	-16	-90
♏ Ophiuchi	5	3.13 4.9	21 12.7	28 0 25.0	- 3 29.6	-0.7568	.5812	.0421	-23	-90
22 Ophiuchi	6½	3.32 3.8	23 19.0	9 43.4	+ 5 27.7	+1.1329	.5842	.0204	+67	+36
24 Ophiuchi	6½	3.32 3.7	22 57.7	10 31.8	+ 6 14.3	+0.7492	.5843	.0187	+67	+ 5
B. A. C. 5758	6	+3.33 - 2.2	-21 23.9	14 24.2	+ 9 57.9	-0.9207	.5853	-.0096	-37	-90
B. A. C. 5866	6	3.43 0.7	21 19.8	21 55.8	- 6 47.8	-0.9936	.5869	+0.0084	-41	-90
52 Ophiuchi	7	3.49 - 0.1	21 57.7	29 2 13.2	- 2 40.3	-0.2828	.5875	.0188	+ 1	-56
B. A. C. 5954	6	3.51 + 0.2	21 50.5	3 37.0	- 1 19.7	-0.3 83	.5877	.0220	- 4	-63
58 Ophiuchi	5	3.53 0.7	21 37.4	5 31.2	+ 0 30.0	-0.5562	.5879	.0266	-13	-78
B. A. C. 5992	6½	+3.55 + 0.6	-22 8.4	5 53.7	+ 0 51.7	-0.0151	.5879	+0.0275	+17	-39
B. A. C. 6088	6	3.67 2.0	22 46.6	12 57.5	+ 7 39.2	+0.8911	.5881	.0444	+67	+15
B. A. C. 6098	6½	3.61 2.8	20 44.0	13 17.5	+ 7 58.4	-1.1825	.5881	.0453	-55	-90
B. A. C. 6125	7	3.66 2.9	21 27.2	15 7.3	+ 9 44.0	-0.3612	.5882	.0496	0	-62
Lalande 33210	6½	3.66 3.0	21 27.8	15 42.5	+10 17.8	-0.3213	.5882	.0510	+ 2	-59
μ Sagittarii	4	+3.68 + 3.6	-21 5.2	17 47.1	-11 42.3	-0.5953	.5882	+0.0560	-12	-82
14 Sagittarii	6½	3.70 3.5	21 44.5	17 58.6	-11 31.3	+0.0852	.5882	.0564	+25	-34
15 Sagittarii	5	3.68 3.7	20 45.7	18 22.7	-11 8.1	-0.8950	.5882	.0573	-30	-90
16 Sagittarii	6	3.66 4.0	20 25.3	18 23.2	-11 7.6	-1.2425	.5882	.0574	-61	-90
17 Sagittarii	7	3.68 4.1	20 34.9	18 56.5	-10 35.6	-1.0462	.5882	.0586	-41	-90
21 Sagittarii	5	3.73 4.7	20 36.1	22 28.7	- 7 11.6	-0.8010	.5881	.0670	-23	-90
B. A. C. 6336	6½	+3.82 + 5.3	-21 29.6	30 3 32.4	- 2 19.5	+0.4779	.5878	+0.0788	+51	-12
B. A. C. 6347	6½	3.82 5.6	21 9.0	3 57.2	- 1 55.7	+0.1593	.5878	.0800	+31	-29
B. A. C. 6376	6½	3.80 7.0	19 43.6	6 51.9	+ 0 52.3	-1.0474	.5875	.0864	-38	-90
O. Arg. S. 18672	6	3.84 7.1	20 24.0	7 36.1	+ 1 34.8	-0.2971	.5874	.0881	+ 7	-57
29 Sagittarii	6	3.85 7.3	20 27.4	8 19.7	+ 2 16.7	-0.1752	.5873	.0897	+14	-49
33 Sagittarii	6	+3.90 + 7.2	-21 30.1	10 4.0	+ 3 57.0	+1.0411	.5872	+0.0937	+69	+26

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.

September.

STAR'S—				AT CONJUNCTION IN R. A.					Limiting Parallels	
Name.	Mag.	Red'ns from 1881.0. $\Delta\alpha$ $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	α'	γ'	N α	S α
ϵ Sagittarii	6	+3.89 + 7.8	-20° 48.5	^d 30 ^h 11 ^m 26.3	^h 5 ^m 16.2	+0.4726	.5869	+.0967	+52	-12
Yarnall 8035	6½	3.85 8.4	19 18.3	11 34.3	+ 5 23.8	-1.0418	.5869	.0970	-37	-90
ξ Sagittarii	4	3.91 7.7	21 15.6	11 35.1	+ 5 24.6	+0.9450	.5869	.0971	+69	+18
Lalande 35497	6½	3.89 8.9	19 24.8	13 47.6	+ 7 32.1	-0.7109	.5869	.0971	-15	-90
Lalande 35499	6	3.89 8.9	19 16.3	13 49.1	+ 7 33.5	-0.8531	.5865	.1020	-23	-90
B. A. C. 6536	6	+3.91 + 9.3	-19 28.4	15 55.1	+ 9 34.8	-0.4292	.5865	+.1020	+ 1	-66
δ Sagittarii	5	3.95 10.2	19 9.6	19 44.6	-10 44.5	-0.3226	.5853	.1147	+ 8	-58
ρ^1 Sagittarii	4	3.94 10.9	18 4.0	21 25.0	+ 9 7.9	-1.2345	.5849	.1183	-54	-90
ρ^2 Sagittarii	5½	+3.95 +10.8	-18 31.4	21 28.4	- 9 47	-0.7645	.5849	+.1184	-16	-90

October.

B. A. C. 6658	6	+3.98 +11.3	-18 35.7	1 0 1.9	- 6 37.1	-0.3828	.5841	+.1238	+ 6	-63
Lalande 36857	6½	4.02 11.4	19 37.9	1 29.8	- 5 12.5	+0.8492	.5837	.1268	+71	+10
B. A. C. 6992	6½	4.11 16.9	15 9.2	21 55.1	- 9 33.3	-0.6742	.5786	.1633	- 6	-89
β Capricorni	3	4.11 16.9	15 9.1	22 1.0	- 9 27.5	-0.6609	.5786	.1654	- 5	-87
B. A. C. 7063	6	4.16 17.6	15 26.8	2 2 14.5	- 5 23.4	+0.3506	.5776	.1723	+52	-19
B. A. C. 7087	6	+4.14 +18.3	-14 7.4	3 34.3	- 4 6.5	-0.7484	.5772	+.1745	- 9	-90
τ^1 Capricorni	6	4.19 18.0	15 33.2	4 52.8	- 2 50.9	+0.9160	.5763	.1766	+75	+14
τ^2 Capricorni	5	4.19 18.2	15 22.0	5 41.7	- 2 3.8	+0.8726	.5766	.1778	+75	+11
B. A. C. 7221	6½	4.17 20.0	12 58.7	10 33.9	+ 2 37.7	-0.6396	.5752	.1851	- 1	-84
8 Aquarii	6	4.21 20.4	13 30.3	14 29.2	+ 6 24.4	+0.6252	.5742	.1905	+73	- 4
9 Aquarii	6	+4.22 +20.4	-13 59.3	15 0.0	+ 6 54.1	+1.2073	.5740	+.1912	+76	+38
ν Aquarii	4½	4.22 21.6	11 50.8	18 38.3	+10 24.4	-0.2342	.5729	.1960	+22	-52
17 Aquarii	6	4.22 23.0	9 49.2	3 0 24.1	- 8 2.3	-1.1122	.5712	.2028	-31	-90
19 Aquarii	6	4.24 23.1	10 14.8	1 22.5	- 7 6.0	-0.4865	.5710	.2038	+ 9	-69
ξ Aquarii	4½	4.25 24.3	8 22.8	6 48.5	- 1 51.7	-1.2106	.5694	.2096	-40	-90
B. A. C. 7562	6½	+4.28 +24.5	- 9 34.6	9 54.5	+ 1 7.7	+0.6215	.5685	+.2127	+76	- 5
ϵ^1 Capricorni	6	4.28 24.5	9 37.3	9 56.8	+ 1 9.9	+0.6748	.5655	.2128	+80	- 2
ϵ^2 Capricorni	6½	4.29 24.5	9 49.1	10 29.7	+ 1 41.6	+0.9874	.5684	.2132	+80	+18
30 Aquarii	5½	4.31 26.0	7 5.4	17 56.0	+ 8 52.0	-0.1270	.5669	.2195	+30	-46
B. A. C. 7744	6	4.31 27.0	5 18.0	22 5.9	-11 6.9	-0.9940	.5661	.2223	-19	-90
44 Aquarii	6	+4.33 +27.0	- 5 58.4	4 0 0.5	- 9 16.4	+0.1037	.5658	+.2234	+43	-33
51 Aquarii	6	4.34 27.3	5 25.9	3 5.4	- 6 18.1	+0.2540	.5654	.2251	+52	-25
κ Aquarii	5	4.37 28.0	4 50.0	9 6.8	- 0 29.4	+1.0224	.5647	.2278	+85	+20
3 Piscium	6	4.40 29.3	0 26.7	19 14.9	+ 9 17.5	-1.0361	.5637	.2304	-21	-90
B. A. C. 8152	6½	4.47 29.5	- 0 21.3	5 5 23.9	- 4 54.7	+1.2163	.5630	.2304	+90	+36
κ Piscium	4½	+4.47 +29.7	+ 0 36.7	6 54.8	- 3 26.9	+0.5975	.5630	+.2302	+78	- 6
9 Piscium	6	4.47 29.7	0 28.6	7 3.3	- 3 18.7	+0.7654	.5630	.2302	+90	+ 3
Yarnall 10387	7	4.48 29.8	1 43.0	8 46.3	- 1 39.3	-0.0800	.5630	.2299	+34	-43
16 Piscium	6	4.49 29.8	1 27.0	11 7.6	+ 0 37.1	+0.7280	.5630	.2294	+90	+ 1
19 Piscium	6	4.51 29.9	2 50.1	15 33.9	+ 4 54.1	+0.3579	.5631	.2281	+60	-19
δ Piscium	5½	+4.59 +29.9	+ 7 32.3	6 6 43.2	- 4 28.4	-0.9612	.5640	+.2200	-16	-83
45 Piscium	6	4.62 29.7	7 2.5	8 58.4	- 2 17.8	+0.0313	.5642	.2183	+40	-35
101 Piscium	6	4.78 26.3	14 3.6	7 15 41.8	+ 3 20.8	-0.8328	.5677	.1848	- 8	-76
104 Piscium	6½	4.78 26.1	13 41.4	17 12.7	+ 4 48.5	-0.1776	.5680	.1828	+28	-43
19 Arietis	6	4.82 23.6	14 43.7	8 7 51.4	- 5 4.1	+1.2779	.5699	.1613	+90	+55
27 Arietis	6	+4.88 +21.8	+17 11.0	15 32.1	+ 2 20.1	-0.0702	.5708	+.1466	+34	-33
B. A. C. 782	6½	4.91 21.4	18 21.7	16 40.7	+ 3 26.3	-1.1200	.5709	.1445	-31	-72
40 Arietis	6	4.89 20.3	17 47.6	23 6.6	+ 9 38.3	+0.3563	.5713	.1326	+61	- 9
π Arietis, <i>mult.</i>	5½	4.87 23.3	16 58.5	23 26.9	+ 9 54.0	+1.2505	.5713	.1320	+90	+54
ρ^1 Arietis	6	4.89 19.5	17 51.2	9 2 14.3	-11 20.7	+0.7009	.5715	.1267	+90	+11
ρ^2 Arietis	6	+4.88 +19.6	+17 33.2	2 29.4	-11 6.1	+1.0457	.5715	+.1262	+90	+34
54 Arietis	6½	4.90 18.2	18 20.5	7 36.7	- 6 9.9	+0.8484	.5716	.1162	+90	+31
δ Arietis	4½	4.93 17.7	19 16.8	8 59.9	- 4 49.7	+0.0301	.5716	.1134	+40	-24
ζ Arietis	4	4.96 17.1	20 36.5	10 23.3	- 3 29.3	-1.1987	.5718	.1108	-41	-70
B. A. C. 1032	6½	+4.95 +16.6	+20 4.9	12 57.2	- 1 0.9	-0.3738	.5718	+.1057	+17	-47

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

October.

STAR'S—				AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0. Δa Δd	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N'n.	S'n.
γ ¹ Arietis	5	+4.97 +16.5	+20 43.3	9 13 5.9	- 0 52.5	-1.0271	.5718	+1.055	-24	-70
γ ² Arietis	6	4.96 16.4	20 19.2	13 45.9	- 0 14.0	-0.5399	.5718	.1041	+ 8	-58
65 Arietis	6	4.95 16.3	20 23.1	14 28.9	+ 0 27.5	-0.5326	.5718	.1026	+ 9	-57
B. A. C. 1143	6	4.92 14.1	20 33.2	23 4.5	+ 8 40.6	+0.0917	.5714	.0845	+44	-18
32 Tauri	6	4.94 12.3	22 8.3	10 4 22.4	-10 9.0	-1.1590	.5708	.0733	-38	-68
A ¹ Tauri	4½	+4.92 +11.6	+21 45.5	7 44.9	- 6 53.8	-0.5250	.5704	+0.661	+ 9	-53
A ² Tauri	6	4.90 11.6	21 41.4	8 1.2	- 6 38.1	-0.4353	.5703	.0656	+14	-47
B. A. C. 1289	7	4.90 10.6	22 6.7	11 15.9	- 3 30.4	-0.6797	.5698	.0586	- 1	-65
51 Tauri	7	4.86 10.3	21 17.5	13 40.7	- 1 10.7	+0.3231	.5694	.0535	+59	- 3
53 Tauri	6½	4.85 10.3	20 51.4	14 7.9	- 0 44.5	+0.8095	.5693	.0525	+90	+25
56 Tauri	6½	+4.87 +10.1	+21 29.3	14 11.7	- 0 40.8	+0.1423	.5693	+0.523	+47	-12
α ¹ Tauri	5½	4.87 9.3	22 1.4	16 39.9	+ 1 42.0	-0.3033	.5687	.0471	+21	-37
α ² Tauri	6½	4.87 9.3	21 55.8	16 41.4	+ 1 43.5	-0.2036	.5687	.0470	+27	-31
ν ¹ Tauri	4½	4.88 9.1	22 32.7	17 3.8	+ 2 5.0	-0.8393	.5686	.0463	-11	-68
ν ² Tauri	6	4.89 8.9	22 43.7	17 29.8	+ 2 30.1	-1.0146	.5685	.0453	-24	-68
B. A. C. 1373	7	+4.85 + 9.2	+21 21.5	17 49.8	+ 2 49.5	+0.4563	.5684	+0.446	+69	+ 5
Runk. 1230	6½	4.84 7.2	22 42.9	23 57.9	+ 8 44.5	-0.7565	.5670	.0313	- 6	-68
τ Tauri	4½	4.84 7.2	22 43.8	23 59.0	+ 8 45.5	-0.7711	.5670	.0313	- 7	-68
ι Tauri	5	4.74 5.2	21 25.2	11 9 7.3	- 6 25.7	+0.8241	.5646	.0116	+90	+29
105 Tauri	6	4.72 4.7	21 32.9	11 14.7	- 4 22.7	+0.7057	.5638	+0.072	+90	+22
π Tauri	6	+4.69 + 3.3	+21 58.4	16 14.6	+ 0 26.7	+0.2596	.5621	-.0034	+54	- 2
ο Tauri	6	4.65 2.5	21 50.1	19 57.3	+ 4 1.6	+0.3832	.5609	.0112	+63	+ 5
ζ Tauri	3	4.58 1.6	21 4.1	12 0 26.0	+ 8 21.1	+1.1405	.5592	.0204	+90	+53
B. A. C. 1774	6½	4.64 0.7	23 15.2	1 6.0	+ 8 59.7	-1.2345	.5590	.0217	-50	-67
B. A. C. 1801	6	4.62 + 0.4	23 8.8	2 55.6	+10 45.5	-1.1631	.5583	.0255	-39	-67
141 Tauri	6	+4.49 - 1.5	+22 23.7	11 14.3	- 5 12.8	-0.6335	.5549	-.0421	+ 2	-60
B. A. C. 1970	6½	4.45 2.3	22 12.5	14 48.7	- 1 45.6	-0.5938	.5533	.0491	+ 5	-57
η Geminorum	3½	4.42 3.0	22 32.3	17 15.2	+ 0 35.9	-1.0797	.5522	.0538	-30	-68
B. A. C. 2039	6½	4.34 3.2	21 15.0	20 15.8	+ 3 30.5	+0.1526	.5509	.0594	+48	-13
15 Geminor., mult.	6	4.30 3.8	20 51.6	23 14.1	+ 6 22.8	+0.3941	.5494	.0649	+64	0
16 Geminorum	6	+4.29 - 3.6	+20 33.9	23 19.2	+ 6 27.8	+0.7107	.5494	-.0651	+90	+17
ν Geminorum	4½	4.27 3.7	20 17.1	23 47.7	+ 6 55.3	+0.9854	.5492	.0660	+90	+35
ζ Geminor., mult.	4	4.09 7.4	20 44.5	13 16 18.3	- 1 6.6	-0.8464	.5415	.0950	-11	-70
B. A. C. 2432	6½	3.91 8.5	18 29.9	14 1 29.0	+ 7 46.6	+0.6794	.5372	.1098	+90	+11
f Geminorum	6	3.79 9.6	17 56.5	9 29.5	- 8 28.1	+0.3649	.5363	.1218	+61	- 8
g Geminorum	5½	+3.78 -10.4	+18 47.8	12 45.2	- 5 18.5	-0.9822	.5321	-.1266	-20	-71
i Cancri	6	3.64 10.4	16 6.3	18 12.3	- 0 1.5	+1.2767	.5298	.1341	+90	+56
3 Cancri	6	3.65 11.2	17 37.8	20 4.0	+ 1 46.8	-0.6589	.5290	.1366	+ 1	-70
5 Cancri	6	3.64 11.0	16 46.8	20 26.6	+ 2 8.7	+0.2289	.5288	.1372	+52	-17
B. A. C. 2731	6½	3.59 12.0	17 21.7	15 0 42.3	+ 6 16.6	-1.0104	.5269	.1426	-21	-73
29 Cancri	6	+3.43 -12.1	+14 36.0	10 12.6	- 8 30.3	+0.6310	.5230	-.1542	+84	+ 3
B. A. C. 2872	6½	3.38 12.2	13 39.7	12 51.3	- 5 56.2	+1.2583	.5220	.1573	+90	+50
A ¹ Cancri	6	3.31 12.6	13 6.2	17 43.9	- 1 12.4	+1.0962	.5204	.1627	+90	+32
60 Cancri	6	3.21 13.1	12 4.6	16 0 21.1	+ 5 13.1	+1.1332	.5183	.1695	+90	+34
α Cancri	4	3.21 13.4	12 18.8	1 40.6	+ 6 30.3	+0.6445	.5180	.1708	+84	+ 1
κ Cancri	5	+3.13 -13.5	+11 8.5	6 32.6	+11 13.7	+1.0985	.5167	-.1754	+90	+30
B. A. C. 3122	6½	3.14 14.0	12 2.6	7 35.6	-11 45.1	-0.0842	.5164	.1763	+34	-39
ω Leonis	6	3.00 14.2	9 34.2	17 28.9	- 2 8.9	+0.8658	.5142	.1847	+90	+12
Δ Leonis	6	2.98 14.5	10 14.1	19 19.5	- 0 21.5	-0.2113	.5138	.1862	+27	-47
ο Leonis	3½	2.94 15.0	10 25.7	17 0 13.5	+ 4 24.1	-1.3462	.5131	.1898	-59	-80
Weisse IX, 1035	7	2.82 15.0	8 14.3	8 7.5	-11 55.5	-0.4450	.5123	.1951	+14	-63
π Leonis	5	+2.81 -15.4	+ 8 36.6	10 25.1	- 9 41.8	-1.3053	.5121	-.1966	-48	-82
14 Sextantis	6	2.74 14.8	6 11.2	13 58.3	- 6 14.7	+0.6673	.5119	.1985	+86	- 1
16 Sextantis	6	2.74 15.0	6 45.0	15 16.7	- 4 58.5	-0.2129	.5119	.1992	+27	-49
19 Sextantis	6	2.70 14.8	5 11.9	17 12.3	- 3 6.2	+1.1128	.5118	.2002	+90	+28
Weisse X, 315	6½	2.64 15.0	4 32.0	18 0 21.8	+ 3 51.1	+0.3993	.5118	.2035	+62	-16
34 Sextantis	6	+2.57 -15.2	+ 4 12.0	9 12.0	-11 33.7	-1.0464	.5120	-.2068	-22	-86

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.

October.

STAR'S—				AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0. $\Delta\alpha$ $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
36 Sextantis	6	+2.55 -15.0	+ 3 6.6	18 10 33.7	-10 14.4	-0.1308	.5123	-.2071	+31	-45
B. A. C. 3726	6	2.52 14.8	1 39.3	14 21.2	- 6 33.4	+0.6782	.5128	.2081	+87	- 2
55 Leonis	6	2.51 14.8	1 22.0	16 12.4	- 4 45.3	+0.6077	.5130	.2085	+79	- 6
p ³ Leonis	6	2.48 14.9	+ 0 38.1	20 26.2	- 0 38.8	+0.5238	.5138	.2093	+72	-10
p ⁴ Leonis	7	2.45 14.6	- 0 41.6	23 26.2	+ 2 16.1	+1.3487	.5143	.2097	+90	+55
p ⁵ Leonis	5	+2.44 -15.0	+ 0 34.4	19 1 49.9	+ 4 35.7	-0.5394	.5148	-.2100	+ 9	-73
B. A. C. 3901	6	2.40 14.8	- 1 3.0	9 19.1	+11 52.0	-0.3403	.5165	.2103	+20	-58
B. A. C. 3903	6	2.41 15.0	0 14.9	9 24.0	+11 56.8	-1.2314	.5165	.2104	-38	-90
e Leonis	5	2.40 14.6	2 21.1	10 35.6	-10 53.7	+0.8098	.5169	.2102	+88	+ 6
B. A. C. 3955	5½	2.37 14.7	1 46.9	14 50.8	- 6 45.9	-0.7028	.5181	.2100	0	-90
B. A. C. 4006	6	+2.34 -14.2	- 4 40.6	21 26.7	- 0 21.5	+1.0590	.5203	-.2090	+86	+23
B. A. C. 4063	6½	2.31 14.2	4 49.2	20 3 57.1	+ 5 57.1	-0.1417	.5226	.2074	+30	-46
B. A. C. 4201	6½	2.29 13.7	8 1.2	16 22.8	- 5 59.3	+0.7992	.5280	.2026	+82	+ 6
q Virginis	6	2.28 13.6	8 47.9	19 18.7	- 3 8.7	+1.0090	.5294	.2011	+81	+19
χ Virginis	5	2.25 13.7	7 20.7	22 3.4	- 0 28.9	-1.1056	.5307	.1995	-29	-90
λ ¹ Libræ	4½	+2.53 - 8.3	-19 20.6	23 20 49.3	- 4 3.7	+0.0566	.5725	-.1122	+29	-35
B. A. C. 5109	6½	2.58 7.2	19 15.9	24 5 30.4	+ 4 18.4	-0.9239	.5770	.0961	-28	-90
κ Libræ	5	2.62 6.7	19 17.6	9 26.4	+ 8 5.8	-1.2517	.5799	.0872	-60	-90
λ Libræ	5½	2.66 6.0	19 48.7	14 11.4	-11 19.8	-1.1010	.5811	.0770	-44	-90
B. A. C. 5278	6	2.69 6.0	21 8.4	15 46.6	- 9 48.2	+0.1582	.5814	.0754	+29	-29
B. A. C. 5281	6	+2.69 - 5.9	-20 38.3	15 58.7	- 9 36.5	-0.3770	.5819	-.0733	+ 1	-63
δ Scorp ⁱⁱ	2½	2.72 6.1	22 17.0	17 3.1	- 8 34.5	+1.2531	.5824	.0709	+68	+53
ω ¹ Scorp ⁱⁱ	4	2.71 5.3	20 20.8	19 46.0	- 5 57.7	-0.9401	.5835	.0649	-32	-90
ω ² Scorp ⁱⁱ	4½	2.72 5.3	20 32.9	20 0.4	- 5 43.9	-0.7469	.5835	.0645	-21	-90
B. A. C. 5395	6	2.74 5.0	21 5.8	22 35.4	- 3 14.6	-0.3363	.5845	.0590	+ 2	-60
O. Arg. S., 15416	7	+2.75 - 4.9	-20 48.3	22 55.3	- 2 55.5	-0.6582	.5847	-.0577	-15	-90
O. Arg. S., 15466	7	2.76 4.8	21 0.5	23 56.7	- 1 56.4	-0.5058	.5850	.0556	- 7	-73
ω Ophiuchi	5	2.81 3.8	21 12.7	25 6 8.6	+ 4 1.4	-0.5944	.5870	.0414	-13	-82
24 Ophiuchi	6	2.95 2.4	22 57.6	16 7.2	-10 23.0	+0.9152	.5895	.0178	+67	+17
B. A. C. 5758	6	2.95 1.3	21 23.0	19 57.0	- 6 42.0	-0.7439	.5901	-.0086	-25	-90
ξ Ophiuchi, var.	5	+3.00 - 0.1	-20 59.0	26 1 54.7	- 0 58.0	-1.1771	.5908	+0.0057	-57	-90
B. A. C. 5866	6	3.03 + 0.1	21 19.8	3 24.0	+ 0 27.8	-0.8100	.5910	.0094	-29	-90
52 Ophiuchi	7	3.10 0.7	21 57.7	7 39.5	+ 4 33.4	-0.0986	.5911	.0197	+11	-44
B. A. C. 5954	6	3.10 1.1	21 50.4	9 2.6	+ 5 53.2	-0.1932	.5911	.0230	+ 7	-50
58 Ophiuchi	5	3.12 1.5	21 37.3	10 56.1	+ 7 42.3	-0.3690	.5911	.0276	- 3	-62
B. A. C. 5992	6½	+3.13 + 1.4	-22 8.4	11 18.3	+ 8 3.7	+0.1711	.5911	+0.0286	+27	-28
B. A. C. 6088	6	3.23 2.6	22 46.5	18 19.9	- 9 10.9	+1.0814	.5907	.0454	+68	+30
B. A. C. 6098	6½	3.19 3.2	20 44.2	18 39.9	- 8 51.8	-0.9027	.5906	.0461	-38	-90
B. A. C. 6125	7	3.23 3.3	21 27.2	20 29.4	- 7 6.5	-0.1679	.5904	.0505	+10	-48
Lalande 33210	6½	3.23 3.6	21 27.9	21 4.5	- 6 32.8	-0.1278	.5904	.0518	+31	-46
μ Sagittarii	4	+3.24 + 4.0	-21 5.2	23 8.8	- 4 33.3	-0.4007	.5901	+0.0567	- 2	-64
14 Sagittarii	6½	3.26 3.9	21 44.5	23 20.2	- 4 22.3	+0.2797	.5900	.0571	+36	-22
15 Sagittarii	5	3.24 4.2	20 45.7	23 44.4	- 3 59.1	-0.6098	.5900	.0580	-18	-90
16 Sagittarii	6	3.34 4.3	20 25.2	23 44.8	- 3 58.7	-1.0471	.5900	.0581	-41	-90
17 Sagittarii	7	3.24 4.5	20 34.9	27 0 18.1	- 3 26.7	-0.8509	.5899	.0594	-27	-90
21 Sagittarii	5	+3.29 + 5.2	-20 36.1	3 50.0	- 0 2.9	-0.6043	.5893	+0.0676	-12	-83
B. A. C. 6336	6½	3.36 5.8	21 39.6	8 54.0	+ 4 49.4	+0.8476	.5883	.0793	+66	+ 1
B. A. C. 6347	6½	3.35 6.1	21 8.9	9 18.7	+ 5 13.1	+0.3591	.5882	.0802	+43	-18
B. A. C. 6376	6½	3.35 7.2	19 43.6	12 13.9	+ 8 1.7	-0.8482	.5873	.0868	-24	-90
O. Arg. S., 18672	6	3.37 7.1	20 24.0	12 58.3	+ 8 44.3	-0.0963	.5873	.0884	-18	-44
Yarnall 7964	6	3.44 7.5	19 19.5	13 8.2	+ 8 53.8	-1.1781	.5872	.0889	-50	-90
29 Sagittarii	6	+3.38 + 7.2	-20 27.4	13 42.0	+ 9 26.3	+0.0261	.5871	+0.0901	+25	-37
33 Sagittarii	6	3.42 7.1	21 30.1	15 26.6	+11 7.0	+1.2514	.5866	.0938	+69	+51
ζ ¹ Sagittarii	6	3.42 7.7	20 48.5	16 49.4	-11 33.4	+0.6763	.5862	.0969	+67	0
Yarnall 8035	6½	3.38 8.3	19 18.4	16 57.4	-11 25.8	-0.8416	.5862	.0972	-23	-90
ζ ² Sagittarii	4	3.43 7.6	21 15.6	16 58.2	-11 25.0	+1.1497	.5862	.0972	+69	+36
Lalande 35497	6½	+3.41 + 8.7	-19 24.8	19 11.4	- 9 16.8	-0.5095	.5855	+1.0200	- 3	-73

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.

October.

STAR'S—					AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1861.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	α'	γ'	N'n.	S'n.	
		$\Delta\alpha$	$\Delta\delta$		d h m	h m						
Lalande 35499	6	+3.40	+ 8.8	-19 16.3	27 19 12.9	- 9 15.4	-0.6525	.5855	+1.021	-11	-88	
B. A. C. 6536	6	3.43	9.1	19 28.4	21 19.6	- 7 13.5	-0.2266	.5849	.1068	+13	-52	
δ Sagittarii	5	3.47	10.0	19 9.6	28 1 10.7	- 3 31.2	-0.1193	.5839	.1145	+19	-46	
ρ^1 Sagittarii	4	3.46	10.6	18 4.1	2 51.5	- 1 54.1	-1.0359	.5832	.1180	-34	-90	
ρ^2 Sagittarii	5½	3.47	10.4	18 31.4	2 55.4	- 1 50.4	-0.5630	.5831	.1181	- 4	-78	
B. A. C. 6658	6	+3.50	+10.9	-18 35.7	5 30.4	+ 0 38.8	-0.1788	.5823	+1.233	+17	-49	
Lalande 36857	6½	3.53	10.9	18 37.9	6 59.2	+ 2 4.3	+0.0429	.5818	.1262	+29	-36	
B. A. C. 6992	6½	3.65	16.2	15 9.2	29 3 41.8	- 1 59.0	-0.4753	.5737	.1635	+ 5	-69	
β Capricorni	3	3.65	16.2	15 9.1	3 47.9	- 1 53.2	-0.4617	.5736	.1637	+ 6	-68	
B. A. C. 7063	6	3.69	16.8	15 26.9	8 6.1	+ 2 15.6	+0.5563	.5719	.1702	+65	- 8	
B. A. C. 7087	6	+3.68	+17.5	-14 7.5	9 27.5	+ 3 34.1	-0.5525	.5714	+1.723	+ 2	-76	
γ^1 Capricorni	6	3.72	17.3	15 33.2	10 47.5	+ 4 51.2	+1.1259	.5709	.1742	+75	+30	
γ^2 Capricorni	5	3.73	17.4	15 22.0	11 37.5	+ 5 39.1	+1.0817	.5706	.1754	+75	+27	
B. A. C. 7221	6½	3.73	18.9	12 58.7	16 35.9	+10 27.1	-0.4466	.5687	.1824	+ 9	-66	
B. A. C. 7242	6½	3.73	19.4	12 1.0	17 39.5	+11 25.4	-1.2266	.5682	.1838	-44	-90	
δ Aquarii	6	+3.79	+19.4	-13 30.4	20 36.6	- 9 40.8	+0.8291	.5672	+1.876	+77	+ 8	
ν Aquarii	4½	3.80	20.5	11 50.8	30 0 51.6	- 5 34.8	-0.0425	.5656	.1928	+32	-41	
17 Aquarii	6	3.82	22.0	9 49.2	6 46.0	+ 0 7.2	-0.9356	.5636	.1993	-18	-90	
19 Aquarii	6	3.85	22.1	10 14.8	7 46.1	+ 1 5.1	-0.3028	.5633	.2003	+19	-56	
ξ Aquarii	4½	3.88	23.3	8 22.8	13 20.7	+ 6 25.0	-1.0590	.5617	.2058	-26	-90	
B. A. C. 7562	6½	+3.92	+23.3	- 9 34.6	16 31.8	+ 9 32.6	+0.8110	.5607	+2.086	+81	+ 7	
ϵ^1 Capricorni	6	3.92	23.3	9 37.3	16 34.1	+ 9 34.8	+0.8650	.5607	.2086	+81	+10	
ϵ^2 Capricorni	6½	3.93	23.4	9 49.1	17 8.0	+10 7.5	+1.1814	.5605	.2091	+80	+34	
30 Aquarii	5½	3.97	25.0	7 5.4	31 0 47.0	- 6 29.4	+0.0443	.5601	.2148	+39	-36	
B. A. C. 7744	6	+3.99	+25.9	- 5 18.0	5 4.2	- 2 21.0	-0.8397	.5576	+2.176	- 9	-90	
44 Aquarii	6	4.02	26.0	5 58.4	7 2.2	- 0 27.1	+0.2709	.5573	.2187	+53	-24	
51 Aquarii	6	4.04	26.5	5 25.9	10 12.6	+ 2 36.8	+0.4190	.5567	.2203	+63	-16	
κ Aquarii	5	+4.10	+27.0	- 4 50.0	16 24.7	+ 8 36.2	+1.1890	.5558	+2.229	+85	-34	

November.

3 Piscium	6	+4.17	+28.9	- 0 26.7	1 2 51.2	- 5 18.5	-0.9118	.5547	+2.252	-13	-90
B. A. C. 8152	6½	4.27	29.2	- 0 21.3	13 18.1	+ 4 47.3	+1.3536	.5546	.2253	+90	+57
κ Piscium	4½	4.29	29.4	+ 0 36.7	14 51.7	+ 6 17.7	+0.7242	.5546	.2251	+90	+ 1
9 Piscium	6	4.29	29.4	0 28.6	15 0.5	+ 6 26.2	+0.8943	.5546	.2251	+90	+11
Yarnall 10387	7	4.31	29.7	1 43.0	16 46.4	+ 8 8.5	+0.0341	.5548	.2248	+40	-36
16 Piscium	6	+4.32	+29.6	+ 1 27.0	19 11.7	+10 28.9	+0.8488	.5549	+2.243	+90	+ 9
19 Piscium	6	4.38	29.9	2 50.1	23 45.5	- 9 6.6	+0.4654	.5552	.2228	+67	-13
36 Piscium	6½	4.53	30.3	7 35.3	2 13 28.9	+ 4 9.1	-1.3431	.5565	.2165	-55	-83
δ Piscium	5½	4.55	30.3	7 32.3	15 18.5	+ 5 54.9	-0.8978	.5570	.2154	-12	-83
45 Piscium	6	4.56	30.0	7 2.5	17 36.9	+ 8 8.6	+0.1021	.5574	.2138	+44	-31
101 Piscium	6	+4.95	+27.8	+14 3.6	4 0 55.5	- 9 37.5	-0.8279	.5643	+1.819	- 8	-76
104 Piscium	6½	4.95	27.5	13 41.4	2 27.6	- 8 8.7	-0.1704	.5647	.1799	+29	-43
19 Arietis	6	5.09	24.8	14 43.7	17 16.0	+ 6 8.6	+1.2671	.5685	.1577	+90	+53
27 Arietis	6	5.20	23.4	17 11.0	5 0 59.8	-10 24.2	-0.1023	.5702	.1448	+32	-35
B. A. C. 782	6½	5.24	23.2	18 21.7	2 9.0	- 9 17.4	-1.1580	.5705	.1428	-35	-72
40 Arietis	6	+5.26	+21.7	+17 47.6	8 36.3	- 3 4.0	+0.3140	.5717	+1.311	+58	-11
π Arietis, <i>mult.</i>	5½	5.24	21.6	16 58.5	8 56.7	- 2 44.3	+1.2106	.5718	.1305	+90	+49
ρ^1 Arietis	6	5.28	20.9	17 51.3	11 44.5	- 0 2.5	+0.6539	.5722	.1252	+88	+ 8
ρ^2 Arietis	6	5.27	21.0	17 33.2	12 0.0	+ 0 12.4	+0.9991	.5722	.1247	+90	+30
54 Arietis	6½	5.32	19.7	18 20.5	17 7.4	+ 5 8.8	+0.7927	.5728	.1147	+90	+18
δ Arietis	4½	+5.35	+19.3	+19 16.9	18 30.5	+ 6 28.9	-0.0296	.5729	+1.120	+37	-27
ζ Arietis	4½	5.40	18.8	20 36.5	19 54.0	+ 7 49.3	-1.2621	.5730	.1093	-52	-70
B. A. C. 1032	6½	5.38	18.3	20 4.9	22 27.7	+10 17.5	-0.4399	.5733	.1041	+14	-51
γ^1 Arietis	5	5.40	18.2	20 43.3	22 36.4	+10 26.0	-1.0942	.5733	.1038	-30	-70
γ^2 Arietis	6	5.40	18.1	20 19.2	23 16.1	+11 4.2	-0.6071	.5733	.1025	+ 4	-63
65 Arietis	6	+5.40	+17.9	+20 23.1	23 58.8	+11 45.4	-0.6008	.5733	+1.011	+ 4	-62

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.

November.

STAR'S—				AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0. $\Delta\alpha$ $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N'n.	S'n.
13 Tauri	5½	+5.39 +15.6	+19 19.4	6 7 39.5	- 4 50.5	+1.2303	.5737	+.0853	+90	+56
B. A. C. 1143	7	5.43 15.3	20 33.2	8 33.3	- 3 58.7	+0.0122	.5737	.0835	+39	-22
32 Tauri	6	5.49 13.8	22 8.3	13 49.7	+ 1 6.3	-1.2459	.5737	.0723	-51	-68
A ¹ Tauri	4½	5.48 12.8	21 45.5	17 11.0	+ 4 20.3	-0.6165	.5736	.0652	+ 3	-61
A ² Tauri	6	5.48 12.7	21 41.5	17 27.9	+ 4 35.9	-0.5272	.5736	.0645	+ 8	-53
B. A. C. 1289	7	+5.49 +11.8	+22 6.7	20 40.6	+ 7 42.3	-0.7754	.5734	+.0576	- 7	-68
ω ² Tauri	5½	5.43 11.5	20 17.3	22 36.2	+ 9 33.8	+1.2604	.5732	.0534	+90	+64
51 Tauri	7	5.46 11.2	21 17.5	23 3.5	+10 0.1	+0.2229	.5731	.0524	+52	- 8
53 Tauri	6½	5.45 11.2	20 51.4	23 31.2	+10 26.8	+0.7076	.5731	.0514	+90	+19
56 Tauri	6½	5.47 9.8	21 29.3	23 35.0	+10 30.4	+0.0430	.5731	.0513	+41	-18
κ ¹ Tauri	5½	+5.48 + 9.0	+22 1.4	7 2 2.1	-11 7.8	-0.4058	.5728	+.0460	+15	-43
κ ² Tauri	6½	5.48 9.1	21 55.8	2 3.7	-11 6.2	-0.3060	.5728	.0459	+21	-37
ν ¹ Tauri	4½	5.50 8.9	22 32.7	2 25.7	-10 45.1	-0.9412	.5727	.0451	-19	-68
ν ² Tauri	6	5.51 8.7	22 43.7	2 51.2	-10 20.5	-1.1187	.5727	.0442	-34	-68
B. A. C. 1373	7	5.46 10.1	21 21.5	3 11.4	-10 0.9	+0.3506	.5726	.0434	+60	0
Rumk. 1250	6½	+5.50 + 8.0	+22 42.9	9 16.2	- 4 9.3	-0.8668	.5716	+.0303	-13	-68
τ Tauri	4½	5.51 7.9	22 43.8	9 17.4	- 4 8.1	-0.8812	.5716	.0302	-14	-68
ι Tauri	5	5.41 5.6	21 25.2	18 20.0	+ 4 35.1	+0.6996	.5694	.0107	+90	+22
105 Tauri	6	5.41 4.9	21 32.9	20 26.0	+ 6 36.6	+0.5799	.5689	+.0062	+80	+16
π Tauri	6	5.40 3.4	21 58.4	8 1 22.5	+11 22.6	+0.1295	.5677	-.0022	+46	- 8
ο Tauri	6	+5.38 + 2.4	+21 50.1	5 2.6	- 9 5.1	+0.2488	.5661	-.0121	+53	- 3
ζ Tauri	3	5.32 + 1.2	21 4.1	9 28.1	- 4 48.9	+0.9988	.5645	.0214	+90	+41
B. A. C. 1801	6	5.39 0.0	23 6.6	11 56.0	- 2 26.2	-1.2572	.5634	.0265	-56	-67
B. A. C. 1835	6½	5.28 0.0	20 49.5	14 13.7	- 0 13.3	+1.1376	.5624	.0312	+90	+51
141 Tauri	6	5.30 - 2.1	22 23.7	20 8.5	+ 5 29.3	-0.7767	.5598	.0431	- 7	-68
B. A. C. 1970	6½	+5.27 - 3.1	+22 12.5	23 40.4	+ 8 53.9	-0.7404	.5582	-.0502	- 5	-68
γ Geminorum	3½	5.26 3.8	22 32.3	9 2 5.1	+11 13.7	-1.2260	.5570	.0539	-48	-68
B. A. C. 2039	6½	5.18 4.3	21 15.0	5 3.5	- 9 53.9	-0.0015	.5556	.0606	+38	-21
15 Geminor., mult.	6	5.12 5.0	20 51.6	7 59.6	- 7 3.8	+0.2369	.5542	.0660	+53	- 9
16 Geminorum	6	5.11 4.9	20 33.9	8 4.6	- 6 59.0	+0.5513	.5541	.0661	+77	+ 8
ν Geminorum	4½	+5.10 - 5.0	+20 17.1	8 32.9	- 6 31.7	+0.8252	.5539	-.0672	+90	+26
ζ Geminor., mult.	4	4.95 9.3	20 44.4	10 0 52.2	+ 9 15.2	-1.0088	.5455	.0961	-23	-69
B. A. C. 2432	6½	4.76 10.8	18 29.8	9 57.5	- 5 57.1	+0.5069	.5406	.1108	+72	+ 1
f Geminorum	6	4.66 12.3	17 56.4	17 53.9	+ 1 44.1	+0.1908	.5364	.1227	+50	-17
g Geminorum	5½	4.65 13.3	18 47.7	21 8.1	+ 4 52.2	-1.1537	.5347	.1273	-35	-71
1 Cancri	6	+4.51 -13.5	+16 6.2	11 2 32.9	+10 7.0	+1.0988	.5319	-.1348	+90	+36
3 Cancri	6	4.52 14.5	17 37.7	4 23.9	+11 54.6	-0.8410	.5310	.1373	-10	-73
5 Cancri	6	4.50 14.2	16 46.7	4 46.3	-11 43.8	+0.0526	.5308	.1378	+41	-26
B. A. C. 2731	6½	4.47 15.1	17 21.6	9 0.6	- 7 37.3	-1.1844	.5298	.1432	-37	-73
29 Cancri	6	4.29 15.9	14 36.0	18 28.5	+ 1 33.4	+0.4523	.5244	.1546	+68	- 7
B. A. C. 2872	6½	+4.24 -16.1	+13 39.6	21 6.7	+ 4 6.9	+1.0789	.5233	-.1576	+90	+31
A ¹ Cancri	6	4.17 16.6	13 6.1	12 1 58.7	+ 8 50.2	+0.9175	.5213	.1627	+90	+19
A ² Cancri	6	4.12 16.8	12 32.5	3 55.0	+10 43.0	+1.2201	.5205	.1647	+90	+44
60 Cancri	6	4.05 17.2	12 4.5	8 35.2	- 8 45.0	+0.9563	.5188	.1693	+90	+21
α Cancri	4	4.04 17.5	12 18.8	9 54.8	- 7 27.7	+0.4677	.5183	.1705	+68	- 9
κ Cancri	5	+3.96 -17.7	+11 8.5	14 47.0	- 2 44.1	+0.9224	.5165	-.1750	+90	+18
B. A. C. 3122	6½	3.97 18.2	12 2.6	15 50.0	- 1 43.0	-0.2594	.5162	.1760	+24	-49
ω Leonis	6	3.81 18.5	9 34.1	13 1 44.5	+ 7 54.5	+0.6944	.5133	.1840	+90	+ 2
λ Leonis	6	3.81 18.9	10 14.0	3 35.9	+ 9 42.7	-0.3849	.5128	.1854	+17	-58
Weisse IX, 1035	7	3.63 19.4	8 14.2	16 26.6	- 1 48.6	-0.6112	.5103	.1938	+ 5	-77
14 Sextantis	6	3.54 19.2	6 11.2	22 19.5	+ 3 54.4	+0.5049	.5095	.1970	+70	-10
16 Sextantis	6	+3.53 -19.5	+ 6 44.9	23 38.4	+ 5 11.1	-0.3751	.5094	-.1976	+18	-59
19 Sextantis	7	3.49 19.1	5 11.8	14 1 34.8	+ 7 4.1	+0.9539	.5092	.1985	+90	+16
Weisse X, 315	6½	3.42 19.3	4 31.9	8 47.2	- 9 55.6	+0.2437	.5090	.2017	+52	-24
34 Sextantis	6	3.32 19.7	4 11.9	17 41.4	- 1 16.5	-1.1976	.5091	.2046	-34	-86
36 Sextantis	6	3.30 19.5	3 6.5	19 4.1	+ 0 3.9	-0.2802	.5092	.2050	+23	-54
B. A. C. 3726	6	+3.26 -19.2	+ 1 39.2	22 53.1	+ 3 46.4	+0.5351	.5096	-.2059	+73	- 9

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.

November.

STAR'S—				AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0. $\Delta\alpha$ $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	α'	γ'	N'n.	S'n.
55 Leonis	6	+3.24 -19.3	+ 1 21.0	15 0 45.2	+ 5 35.4	+0.4658	.5098	-.2063	+67	-13
B. A. C. 3779	6	3.19 19.0	- 0 6.9	4 48.8	+ 9 32.0	+1.2505	.5103	.2071	+90	+40
p ³ Leonis	6	3.19 19.2	+ 0 38.1	5 1.2	+ 9 44.1	+0.3854	.5104	.2071	+61	-17
p ⁴ Leonis	7	3.16 18.7	- 0 41.7	8 2.7	-11 19.5	+1.2145	.5109	.2074	+90	+36
p ⁵ Leonis	5	3.14 19.1	+ 0 34.3	10 27.5	- 8 58.8	-0.6748	.5114	.2077	+ 2	-36
B. A. C. 3901	6	+3.08 -18.7	- 1 3.0	18 0.5	- 1 38.8	-0.4676	.5132	-.2079	+13	-67
B. A. C. 3903	6	3.08 19.0	0 15.0	18 5.4	- 1 34.0	-1.3602	.5133	.2079	-59	-90
e Leonis	5	3.07 18.4	2 21.1	19 17.5	- 0 24.0	+0.6860	.5136	.2079	+87	- 1
B. A. C. 3955	5.5	3.03 18.6	1 47.0	23 34.7	+ 3 45.8	-0.8247	.5148	.2076	- 7	-90
B. A. C. 4006	6	2.98 17.8	4 40.6	16 6 13.6	+10 13.3	+0.9464	.5170	.2066	+86	+15
B. A. C. 4063	6.5	+2.93 -17.5	- 4 49.2	12 46.5	- 7 25.4	-0.2474	.5197	-.2051	+24	-53
B. A. C. 4201	6.5	2.85 16.3	8 1.3	17 1 16.3	+ 4 42.2	+0.6722	.5258	.2005	+81	- 2
q Virginis	6	2.85 16.0	8 48.0	4 12.9	+ 7 33.4	+0.9210	.5274	.1992	+81	+13
x Virginis	5	2.81 16.5	7 20.7	6 58.2	+10 13.8	-1.1896	.5289	.1976	-36	-90
B. A. C. 4259	6	2.81 16.5	7 23.0	7 2.5	+10 17.9	-1.1636	.5289	.1976	-34	-90
Rumk. 4137	7	+2.79 -15.9	- 8 34.5	11 50.0	- 9 3.4	-0.8222	.5321	-.1947	-10	-90
B. A. C. 4312	6.5	2.80 15.7	9 41.7	13 0.4	- 7 55.1	+0.1613	.5323	.1939	+44	-30
ψ Virginis	5	2.78 15.9	8 53.8	14 29.0	- 6 29.3	-0.9879	.5331	.1929	-21	-90
g Virginis	6	2.75 15.2	10 6.5	21 6.5	- 0 4.2	-0.9532	.5373	.1880	-19	-90
i Virginis	6	2.73 14.2	12 5.5	18 6 9.4	+ 8 41.5	-0.5030	.5438	.1796	+ 7	-71
B. A. C. 4531	6	+2.72 -13.8	-12 36.5	9 55.2	-11 40.0	-0.6244	.5461	-.1761	- 1	-82
85 Virginia	6	2.73 12.8	15 10.5	15 0.0	- 6 45.2	+1.2086	.5495	.1707	+75	+39
B. A. C. 4679	6.5	2.71 12.4	14 24.1	23 41.3	+ 1 38.6	-1.0411	.5556	.1599	-29	-90
B. A. C. 4700	5.5	2.72 -11.8	15 44.5	19 2 33.9	+ 4 25.4	-0.0852	.5577	-.1560	+28	-44
B. A. C. 5954	6	2.96 + 1.6	21 50.5	22 16 10.9	- 9 10.8	-0.1349	.6001	+0.242	+10	-46
58 Ophiuchi	5	+2.96 + 1.8	-21 37.3	18 1.4	- 7 24.8	-0.3076	.6001	+0.287	+ 1	-57
B. A. C. 5992	6.5	2.98 2.0	22 8.4	18 23.0	- 7 4.0	+0.2266	.6001	.02 6	+31	-25
B. A. C. 6088	6	3.03 3.2	22 46.5	23 1 13.8	- 0 29.5	+1.1308	.5996	.0467	+67	+35
B. A. C. 6098	6.5	2.98 3.6	20 44.0	1 33.1	- 0 11.0	-0.9183	.5995	.0475	-33	-90
B. A. C. 6125	7	3.01 3.7	21 27.2	3 19.8	+ 1 31.5	-0.1026	.5993	.0519	+14	-44
Lalande 33210	6.5	+3.02 + 3.9	-21 27.8	3 54.0	+ 2 4.3	-0.0623	.5992	+0.533	+16	-42
μ Sagittarii	4	3.02 4.4	21 5.2	5 55.1	+ 4 0.6	-0.3307	.5989	.0582	+ 2	-59
14 Sagittarii	6.5	3.04 4.3	21 44.5	6 6.3	+ 4 11.3	+0.3419	.5988	.0587	+40	-19
15 Sagittarii	5	3.01 4.5	20 45.6	6 29.8	+ 4 34.0	-0.6262	.5988	.0596	-14	-85
16 Sagittarii	6	3.01 4.6	20 25.2	6 30.3	+ 4 34.4	-0.9694	.5988	.0597	-35	-90
17 Sagittarii	7	+3.01 + 4.7	-20 34.8	7 2.7	+ 5 5.5	-0.7752	.5987	+0.609	-22	-90
21 Sagittarii	5	3.04 5.3	20 26.1	10 29.2	+ 8 23.9	-0.5289	.5980	.0693	- 7	-75
B. A. C. 6336	6.5	3.09 6.1	21 29.6	15 25.6	-10 51.4	+0.7415	.5968	.0809	+69	+ 5
B. A. C. 6347	6.5	3.08 6.2	21 8.9	15 49.7	-10 28.4	+0.4263	.5967	.0819	+48	-14
Yarnall 7918	6.5	3.05 6.9	19 23.7	17 27.3	- 8 54.6	-1.2078	.5962	.0857	-38	-90
B. A. C. 6376	6.5	+3.07 + 7.0	-19 43.6	18 40.6	- 7 44.1	-0.7661	.5959	+0.884	-19	-90
O. Arg. S., 18672	6	3.09 7.1	20 24.0	19 23.9	- 7 2.6	-0.0224	.5956	.0901	+22	-39
Yarnall 7964	6	3.06 7.3	19 19.5	19 33.5	- 6 53.3	-1.0919	.5956	.0905	-42	-90
29 Sagittarii	6	3.10 7.3	20 27.4	20 6.7	- 6 21.5	+0.0994	.5954	.0917	-29	-33
ζ Sagittarii	6	3.13 7.8	20 48.5	23 9.6	- 3 25.7	+0.7442	.5943	.0986	+69	+ 4
Yarnall 8035	6.5	+3.09 + 8.1	-19 18.4	23 17.4	- 3 18.1	-0.7577	.5943	+0.989	-18	-90
ζ Sagittarii	4	3.14 7.8	21 15.5	23 18.2	- 3 17.4	+1.2134	.5943	.0989	+69	+44
Lalande 35497	6.5	3.11 8.5	19 24.8	24 1 28.3	- 1 12.4	-0.4276	.5934	.1037	+ 2	-66
Lalande 35499	6	3.11 8.5	19 16.2	1 29.7	- 1 11.1	-0.5690	.5934	.1038	- 6	-78
B. A. C. 6536	6	3.13 8.8	19 28.4	3 33.6	+ 0 48.0	-0.1467	.5927	.1083	+17	-47
d Sagittarii	5	3.15 9.7	19 9.6	7 19.6	+ 4 25.2	-0.0396	.5911	.1164	+24	-41
ρ ¹ Sagittarii	4	+3.13 +10.2	-18 4.0	8 58.7	+ 6 0.5	-0.9448	.5904	+1.198	-28	-90
ρ ² Sagittarii	5.5	3.14 10.2	18 31.5	9 2.0	+ 6 3.6	-0.4774	.5904	.1199	0	-70
B. A. C. 6658	6	3.17 10.5	18 35.7	11 33.7	+ 8 29.5	-0.0963	.5892	.1252	+21	-44
Lalande 36857	6.5	3.20 10.6	19 37.9	13 0.7	+ 9 53.2	+1.1314	.5886	.1279	+71	+33
g Sagittarii	5.5	3.22 13.4	15 48.1	23 50.2	- 3 42.0	-1.2260	.5833	.1486	-49	-90
B. A. C. 6992	6.5	+3.27 +15.3	-15 9.3	25 9 21.8	+ 5 28.4	-0.3840	.5785	+1.649	+10	-62

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.

November.

Star's—				At Conjunction in R. A.					Limiting Parallels	
Name.	Mag.	Red'ns from 1881.0. $\Delta\alpha$	Apparent Declination. $\Delta\delta$	Washington Mean Time.	Hour Angle H	Y	α'	γ'	N ⁿ .	S ⁿ .
6 Capricorni	3	+3.28	+15.2	-15° 9.1	25 9 27.6	+ 5 33.9	-0.3709	.5785	+1.650	+11° -61°
B. A. C. 7063	6	3.33	15.8	15 26.9	13 42.4	+ 9 39.3	+0.6424	.5763	.1716	+72° - 3
B. A. C. 7087	6	3.31	16.5	14 7.5	15 2.8	+10 56.8	-0.4603	.5756	.1736	+ 7 -68
7 ¹ Capricorni	6	3.35	16.3	15 33.2	16 21.7	-11 47.2	+1.2092	.5749	.1755	+75° +39
7 ² Capricorni	5	3.36	16.5	15 22.0	17 11.3	-10 59.4	+1.1665	.5745	.1766	+75° +34
B. A. C. 7221	6 $\frac{1}{2}$	+3.36	+17.8	-12 58.7	22 6.7	- 6 14.7	-0.3538	.5720	+1.834	+14° -60
B. A. C. 7242	6 $\frac{1}{2}$	3.36	18.4	12 1.0	23 9.6	- 5 14.1	-1.1308	.5713	.1849	-34° -90
8 Aquarii	6	3.42	18.2	13 30.4	26 2 5.2	- 2 24.8	+0.9168	.5699	.1884	+77° +14
9 Aquarii	4 $\frac{1}{2}$	3.43	19.3	11 50.8	6 18.4	+ 1 39.3	+0.0488	.5677	.1933	+37° -35
17 Aquarii	6	3.45	20.8	9 49.2	12 11.1	+ 7 19.5	-0.8403	.5647	.1996	-11° -90
19 Aquarii	6	+3.46	+20.8	-10 14.9	13 10.9	+ 8 17.2	-0.2112	.5643	+2.006	+24° -50
8 Aquarii	4 $\frac{1}{2}$	3.50	22.0	8 22.9	18 44.8	-10 20.6	-0.9670	.5616	.2057	-19° -90
B. A. C. 7562	6 $\frac{1}{2}$	3.55	21.9	9 34.6	21 55.8	- 7 16.2	+0.9014	.5602	.2084	+81° +12
c ¹ Capricorni	6	3.55	21.9	9 37.3	21 58.1	- 7 13.9	+0.9552	.5602	.2084	+81° +16
c ² Capricorni	6 $\frac{1}{2}$	3.56	21.9	9 49.1	22 31.9	- 6 41.4	+1.2712	.5600	.2088	+80° +44
30 Aquarii	5 $\frac{1}{2}$	+3.60	+23.5	- 7 5.4	27 6 11.9	+ 0 42.8	+0.1339	.5571	+2.141	+44° -31
B. A. C. 7744	6	3.64	24.4	5 18.0	10 30.3	+ 4 52.4	-0.7529	.5554	.2165	- 4° -90
44 Aquarii	6	3.65	24.3	5 58.4	12 28.9	+ 6 46.9	+0.3597	.5551	.2175	+59° -19
51 Aquarii	6	3.69	24.8	5 23.9	15 40.6	+ 9 52.1	+0.5077	.5542	.2190	+69° -11
κ Aquarii	5	3.76	25.3	4 50.1	21 56.0	- 8 5.2	+1.2800	.5525	.2211	+85° +44
3 Piscium	6	+3.85	+27.3	- 0 26.7	28 8 29.6	+ 2 7.3	-0.8350	.5504	+2.230	- 8° -90
κ Piscium	4 $\frac{1}{2}$	3.99	27.8	+ 0 36.7	20 41.2	-10 5.4	+0.8061	.5504	.2223	+90° + 6
9 Piscium	6	3.99	27.8	+ 0 28.6	20 50.1	- 9 56.7	+0.9770	.5490	.2223	+90° +16
Yarnall 10387	7	4.02	28.2	1 43.0	22 37.9	- 8 12.5	+0.1103	.5489	.2220	+44° -32
16 Piscium	6	4.05	28.2	1 27.0	29 1 5.9	- 5 49.5	+0.9298	.5489	.2215	+90° +14
19 Piscium	6	+4.10	+28.6	+ 2 50.1	5 44.8	- 1 19.8	+0.5416	.5489	+2.200	+73° - 9
36 Piscium	6 $\frac{1}{2}$	4.31	29.7	7 35.3	19 45.9	-11 46.5	-1.2900	.5497	.2133	-46° -83
d Piscium	5 $\frac{1}{2}$	4.34	29.5	7 32.2	21 37.5	- 9 58.6	-0.8429	.5499	.2121	- 8° -83
45 Piscium	6	+4.36	+29.2	+ 7 2.5	23 59.0	- 7 41.8	+0.1648	.5503	+2.105	+48° -28

December.

101 Piscium	6	+4.90	+27.7	+14 3.6	1 8 2.4	- 0 43.0	-0.7952	.5571	+1.788	- 6° -76
104 Piscium	6 $\frac{1}{2}$	4.90	27.3	13 41.4	9 36.7	+ 0 48.0	-0.1382	.5575	.1768	+31° -40
19 Arietis	6	5.11	24.8	14 43.7	2 0 45.5	+ 8 34.2	+1.3101	.5616	.1552	+90° +62
27 Arietis	6	5.29	23.7	17 11.0	8 39.2	- 0 57.0	-0.0773	.5636	.1424	+34° -33
B. A. C. 782	6 $\frac{1}{2}$	5.34	23.7	18 21.7	9 49.7	+ 0 11.1	-1.1437	.5639	.1405	-34° -72
40 Arietis	6	+5.39	+22.1	+17 47.6	16 24.9	+ 6 32.3	+0.3380	.5656	+1.291	+59° - 9
π Arietis, mult.	5 $\frac{1}{2}$	5.38	21.8	16 58.5	16 45.7	+ 6 52.5	+1.2414	.5657	.1285	+90° +53
ρ^2 Arietis	6	5.43	21.3	17 51.3	19 36.6	+ 9 37.4	+0.6784	.5664	.1234	+90° +10
ρ^3 Arietis	6	5.42	21.2	17 33.2	19 52.3	+ 9 52.5	+1.0268	.5664	.1229	+90° +33
54 Arietis	6 $\frac{1}{2}$	5.50	20.1	18 20.5	3 1 5.2	- 9 5.7	+0.8151	.5676	.1131	+90° +19
δ Arietis	4 $\frac{1}{2}$	+5.54	+19.9	+19 16.9	2 29.7	- 7 44.0	-0.0146	.5679	+1.105	+37° -26
ζ Arietis	4 $\frac{1}{2}$	5.60	19.7	20 36.5	3 54.7	- 6 22.1	-1.2578	.5683	.1078	-51° -70
B. A. C. 1032	6 $\frac{1}{2}$	5.60	19.0	20 4.9	6 30.9	- 3 51.5	-0.4302	.5687	.1028	+14° -50
7 ¹ Arietis	5	5.62	19.1	20 43.3	6 39.7	- 3 43.0	-1.0899	.5688	.1027	-30° -70
7 ² Arietis	6	5.63	18.7	20 19.2	7 20.2	- 3 4.0	-0.5991	.5689	.1011	+ 4° -62
65 Arietis	6	+5.64	+18.5	+20 23.1	8 3.9	- 2 21.8	-0.5930	.5690	+0.998	+ 5° -62
13 Tauri	5 $\frac{1}{2}$	5.67	16.2	19 19.4	15 50.8	+ 5 8.5	+1.2477	.5700	.0843	+90° +59
B. A. C. 1143	7	5.72	16.1	20 33.2	16 45.4	+ 6 1.2	+0.0206	.5701	.0824	+39° -22
32 Tauri	6	5.81	14.7	22 8.3	22 5.7	+11 10.1	-1.2488	.5706	.0714	-52° -68
A ¹ Tauri	4 $\frac{1}{2}$	5.82	13.7	21 45.5	4 1 29.3	- 9 33.7	-0.6169	.5708	.0643	+ 3° -60
A ² Tauri	6	+5.82	+13.7	+21 41.5	1 45.6	- 9 18.0	-0.5272	.5708	+0.638	+ 8° -53
B. A. C. 1289	7	5.86	12.7	22 6.7	5 1.1	- 6 9.4	-0.7780	.5710	.0569	- 7° -68
β^3 Tauri	5 $\frac{1}{2}$	5.80	11.9	20 17.3	6 57.8	- 4 16.9	+1.2691	.5710	.0523	+90° +66
51 Tauri	7	5.85	11.6	21 17.5	7 25.4	- 3 50.2	+0.2252	.5710	.0518	+52° - 8
53 Tauri	6 $\frac{1}{2}$	+5.83	+11.4	+20 51.4	7 53.3	- 3 23.4	+0.7124	.5710	+0.508	+90° +19

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

December.

STAR'S—					AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N'n.	S'n.		
		$\Delta\alpha$	$\Delta\delta$		d h m	h m							
56 Tauri	6 $\frac{1}{2}$	+5.86	+11.4	+21 29.3	4 7 57.2	- 3 19.7	+0.0429	.5710	+0.0507	+41	-17		
α^1 Tauri	5 $\frac{1}{2}$	5.89	10.7	22 1.4	10 25.6	- 0 56.5	-0.4085	.5709	.0454	+15	-43		
α^2 Tauri	6 $\frac{1}{2}$	5.89	10.7	21 55.8	10 27.1	- 0 55.0	-0.3084	.5709	.0453	+21	-37		
ν^1 Tauri	4 $\frac{1}{2}$	5.92	10.5	22 32.7	10 49.4	- 0 33.6	-0.9466	.5709	.0446	-19	-68		
ν^2 Tauri	6	5.92	10.4	23 43.7	11 15.4	- 0 8.5	-1.1233	.5709	.0436	-34	-68		
B. A. C. 1373	7	+5.87	+10.3	+21 21.5	11 35.4	+ 0 10.8	+0.3518	.5709	+0.0429	+61	0		
Rumk. 1250	6 $\frac{1}{2}$	5.94	8.4	22 42.9	17 42.9	+ 6 5.2	-0.8736	.5704	.0298	-14	-68		
τ Tauri	4 $\frac{1}{2}$	5.95	8.4	22 43.8	17 44.0	+ 6 6.3	-0.8886	.5704	.0298	-15	-68		
ζ Tauri	5	5.91	5.5	21 25.2	5 2 49.4	- 9 7.7	+0.6953	.5689	.0103	+90	+22		
105 Tauri	6	5.92	4.8	21 32.9	4 55.9	- 7 5.6	+0.5742	.5684	+0.058	+80	+16		
α Tauri	6	+5.94	+ 3.1	+21 58.5	9 53.3	- 2 18.7	+0.1206	.5671	-.0069	+45	- 9		
σ Tauri	6	5.93	1.5	21 50.1	13 33.7	+ 1 13.9	+0.2391	.5664	.0125	+53	- 3		
ζ Tauri	3	5.89	+ 0.6	21 4.1	17 59.5	+ 5 30.4	+0.9893	.5653	.0254	+90	+40		
B. A. C. 1835	6 $\frac{1}{2}$	5.88	- 0.9	20 49.5	22 45.0	+10 5.9	+1.1264	.5637	.0317	+90	+50		
141 Tauri	6	5.93	3.0	22 23.7	6 4 39.3	- 8 12.1	-0.7920	.5616	.0436	- 8	-68		
B. A. C. 1970	6 $\frac{1}{2}$	+5.91	- 4.1	+22 12.5	8 10.8	- 4 47.9	-0.7561	.5602	-.0505	- 6	-68		
γ Geminorum	3 $\frac{1}{2}$	5.92	4.8	22 32.3	10 35.1	- 2 28.5	-1.2425	.5592	.0553	-51	-68		
B. A. C. 2039	6 $\frac{1}{2}$	5.85	5.6	21 15.0	13 32.9	+ 0 23.3	-0.0178	.5579	.0609	+37	-22		
15 Geminor., mult.	6	5.82	6.5	20 51.5	16 28.4	+ 3 12.7	+0.2200	.5566	.0665	+52	- 9		
16 Geminorum	6	5.81	6.4	20 33.9	16 33.4	+ 3 17.6	+0.5347	.5566	.0667	+75	+ 7		
ν Geminorum	4 $\frac{1}{2}$	+5.79	- 6.5	+20 17.0	17 1.6	+ 3 44.8	+0.8089	.5563	-.0676	+90	+23		
ζ Geminor., mult.	4	5.70	11.4	20 44.4	7 9 16.1	- 4 33.0	-1.0275	.5486	.0967	-24	-69		
B. A. C. 2432	6 $\frac{1}{2}$	5.55	13.3	18 29.8	18 18.2	+ 4 11.3	+0.4861	.5437	.1114	+71	0		
Yarnall 3052	6	5.48	14.3	17 20.2	22 30.0	+ 8 15.1	+1.1918	.5415	.1178	+90	+47		
f Geminorum	6	5.46	15.3	17 56.4	8 2 11.6	+11 49.6	+0.1699	.5395	.1234	+48	-18		
g Geminorum	5 $\frac{1}{2}$	+5.47	-16.2	+18 47.7	5 24.5	- 9 3.6	-1.1733	.5378	-.1280	-38	-71		
1 Cancri	6	5.32	16.7	16 6.2	10 47.4	- 3 50.8	+1.0770	.5349	.1355	+90	+34		
3 Cancri	6	5.35	17.4	17 37.7	12 37.7	- 2 4.0	-0.8537	.5339	.1380	-11	-73		
5 Cancri	6	5.32	17.3	16 46.7	13 0.1	- 1 42.2	+0.0312	.5337	.1384	+40	-28		
B. A. C. 2731	6 $\frac{1}{2}$	5.20	18.4	17 21.5	17 12.9	+ 2 22.8	-1.2048	.5315	.1440	-40	-73		
29 Cancri	6	+5.12	-19.6	+14 35.9	9 2 37.7	+11 30.4	+0.4315	.5267	-.1553	+66	- 8		
B. A. C. 2872	6 $\frac{1}{2}$	5.07	19.9	13 39.5	5 15.2	- 9 56.8	+1.0583	.5265	.1582	+90	+30		
A ¹ Cancri	6	5.01	20.7	13 6.0	10 6.0	- 5 14.7	+0.8968	.5232	.1633	+90	+18		
A ² Cancri	6	4.98	20.9	12 32.4	12 1.8	- 3 22.4	+1.2001	.5224	.1653	+90	+42		
60 Cancri	6	4.92	21.5	12 4.4	16 41.1	+ 1 8.7	+0.9367	.5203	.1698	+90	+19		
α Cancri	4	+4.91	-21.9	+12 18.7	18 0.5	+ 2 25.7	+0.4486	.5198	-.1710	+67	- 9		
κ Cancri	5	4.83	22.3	11 8.4	22 52.0	+ 7 8.7	+0.9040	.5178	.1754	+90	+16		
B. A. C. 3122	6 $\frac{1}{2}$	4.85	22.8	12 2.5	23 54.9	+ 8 9.8	-0.2787	.5173	.1763	+23	-50		
ω Leonis	6	4.68	23.4	9 34.0	10 9 49.0	- 6 13.3	+0.6773	.5138	.1842	+88	+ 1		
λ Leonis	6	4.68	23.8	10 14.0	11 40.4	- 4 25.1	-0.4030	.5133	.1854	+16	-59		
Weisse IX, 1035	7	+4.51	-24.7	+ 8 14.1	11 0 32.7	+ 8 5.2	-0.6282	.5101	-.1934	+ 4	-71		
14 Sextantis	6	4.41	24.7	6 11.1	6 26.9	-10 10.5	+0.4926	.5087	.1965	+68	-11		
16 Sextantis	6	4.41	24.7	6 44.8	7 46.2	- 8 53.5	-0.3901	.5084	.1971	+17	-60		
Weisse X, 315	6 $\frac{1}{2}$	4.29	24.7	4 31.8	16 58.5	+ 0 3.4	+0.2321	.5073	.2009	+52	-25		
34 Sextantis	6	4.20	25.2	4 11.8	12 1 57.1	+ 8 47.1	-1.2128	.5068	.2035	-35	-86		
36 Sextantis	6	+4.17	-24.9	+ 3 6.4	3 20.3	+10 7.9	-0.2909	.5068	-.2038	+22	-55		
B. A. C. 3726	6	4.13	24.5	1 39.1	7 11.8	-10 7.1	+0.5279	.5068	.2046	+72	-10		
55 Leonis	6	4.11	24.5	+ 1 21.8	9 5.1	- 8 17.0	+0.4591	.5069	.2049	+67	-13		
B. A. C. 3779	6	4.07	24.2	- 0 7.0	13 11.6	- 4 17.3	+1.2482	.5070	.2054	+90	+40		
β^2 Leonis	6	4.07	24.4	+ 0 38.0	13 24.0	- 4 5.3	+0.3794	.5070	.2055	+61	-18		
β^1 Leonis	7	4.03	24.1	- 0 41.8	16 27.6	- 1 6.8	+1.2142	.5073	.2058	+90	+36		
β^5 Leonis	5	+4.01	-24.8	+ 0 34.2	18 54.5	+ 1 16.1	-0.6855	.5076	-.2059	+ 1	-87		
B. A. C. 3901	6	3.93	24.2	- 1 3.1	12 33.5	+ 8 42.1	-0.4756	.5089	.2060	+13	-68		
B. A. C. 3903	6	3.93	24.5	0 15.0	2 38.4	+ 8 46.9	-1.3731	.5089	.2060	-68	-90		
ϵ Leonis	5	3.92	23.8	2 21.2	3 51.7	+ 9 58.1	+0.6855	.5092	.2059	+87	- 1		
B. A. C. 3955	5 $\frac{1}{2}$	3.88	24.0	1 47.1	8 12.8	- 9 48.2	-0.8347	.5102	.2056	- 8	-90		
B. A. C. 4006	6	+3.83	-22.9	- 4 40.7	14 58.0	- 3 14.5	+0.9497	.5121	-.2045	+86	+15		

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON.

December.

Star's—				At Conjunction in R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0. $\Delta\alpha$ $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	α'	γ'	N'n.	S'n.	
B. A. C. 4063	6 $\frac{1}{2}$	+3.77 -22.8	- 4 49.4	13 21 37.3	+ 3 13.3	-0.2505	.5144	-.2044	+24	-53	
B. A. C. 4201	6 $\frac{1}{2}$	3.68 21.2	8 1.3	14 10 20.2	- 8 26.0	+0.6771	.5198	.1981	+81	- 1	
η Virginis	6	3.68 20.8	8 48.1	13 20.0	- 5 31.5	+0.9284	.5214	.1967	+81	+14	
χ Virginis	5	3.64 21.1	7 20.8	16 8.2	- 2 48.3	-1.1959	.5228	.1953	-37	-90	
B. A. C. 4259	6	3.64 21.1	7 23.0	16 12.6	- 2 44.0	-1.1698	.5228	.1953	-34	-90	
Rumk. 4137	7	+3.62 -20.5	- 8 34.5	21 5.3	+ 1 59.9	-0.8254	.5256	-.1924	-10	-90	
B. A. C. 4312	6 $\frac{1}{2}$	3.61 20.0	9 41.7	22 16.9	+ 3 9.3	+0.1543	.5262	.1916	+45	-30	
ψ Virginis	5	3.59 20.2	8 53.9	23 46.9	+ 3 36.6	-0.9915	.5271	.1906	-21	-90	
ϕ Virginis	6	3.55 19.6	10 6.5	15 6 31.5	+11 8.8	-0.9554	.5314	.1858	-19	-90	
ι Virginis	6	3.51 18.2	12 5.6	15 43.7	- 3 56.3	-0.5014	.5376	.1779	+ 7	-71	
B. A. C. 4531	6	+3.49 -17.6	-12 36.5	19 32.9	- 0 14.3	-0.6222	.5403	-.1742	0	-82	
85 Virginis	6	3.48 16.4	15 10.6	16 0 42.5	+ 4 45.4	+1.2232	.5441	.1687	+75	+41	
B. A. C. 4679	6 $\frac{1}{2}$	3.43 15.4	14 24.2	9 31.5	-10 43.1	-1.0399	.5509	.1583	-29	-90	
B. A. C. 4700	5 $\frac{1}{2}$	3.43 14.7	15 44.6	12 26.3	- 7 54.1	-0.0800	.5532	.1545	+26	-43	
B. A. C. 4896	6	3.35 11.9	17 17.9	17 6 35.1	+ 9 33.1	-1.0106	.5677	.1273	-31	-90	
ι Libræ	4 $\frac{1}{2}$	+3.34 -10.1	-19 20.6	15 25.2	- 5 51.9	+0.0622	.5748	-.1117	+29	-35	
α Libræ	6 $\frac{1}{2}$	3.34 10.0	19 12.1	15 53.4	- 5 24.7	-0.1373	.5750	.1108	+18	-46	
O. Arg. S., 14428	6 $\frac{1}{2}$	3.34 9.4	20 17.1	17 47.0	- 3 35.3	+0.7793	.5765	.1071	+70	+ 6	
B. A. C. 5109	6 $\frac{1}{2}$	3.29 8.6	19 15.9	23 58.8	+ 2 22.8	-0.9001	.5811	.0949	-27	-90	
κ Libræ	5	3.28 8.0	19 17.6	18 3 50.4	+ 6 5.7	-1.2201	.5840	.0871	-55	-90	
λ Libræ	5 $\frac{1}{2}$	+3.27 -6.9	-19 48.7	8 29.4	+10 34.0	-1.0661	.5873	-.0769	-41	-90	
B. A. C. 5278	6	3.30 6.5	21 8.4	10 2.5	-11 56.4	+0.1791	.5884	.0736	+32	-28	
B. A. C. 5281	6	3.29 6.4	20 38.3	10 14.3	-11 45.1	-0.3491	.5886	.0728	+ 2	-61	
δ Scorpii	2 $\frac{1}{2}$	3.33 5.9	22 16.9	11 17.2	-10 44.6	+1.2595	.5892	.0707	+68	+55	
ω Scorpii	4	3.27 5.8	20 20.8	13 56.0	- 8 11.9	-0.9012	.5909	.0646	-30	-90	
ω Scorpii	4 $\frac{1}{2}$	+3.27 -5.7	-20 32.9	14 10.0	- 7 58.4	-0.7107	.5910	-.0643	-18	-90	
B. A. C. 5395	6	3.28 5.2	21 5.8	16 40.8	- 5 33.4	-0.3040	.5926	.0588	+ 4	-57	
O. Arg. S., 15416	7	3.27 5.2	20 48.3	17 0.2	- 5 14.8	-0.6203	.5928	.0581	-13	-85	
O. Arg. S., 15466	7	3.27 5.0	21 0.5	17 59.8	- 4 17.5	-0.4692	.5934	.0556	- 5	-70	
ω Ophiuchi	5	3.26 -3.8	21 12.7	19 0 0.5	+ 1 29.1	-0.5513	.5967	.0413	-11	-77	
VENUS			-21 49.4	8 57.4	+10 4.7	-0.2068	.5645	-.0117	+ 5	-51	
ϵ Sagittarii	4	+3.17 +8.0	21 15.5	21 8 13.9	+7 26.2	+1.1771	.6036	+1.001	+69	+39	
δ Sagittarii	5	3.15 9.6	19 9.6	16 1.0	- 9 5.4	-0.0613	.6011	.1180	+22	-42	
ρ Sagittarii	4	3.13 10.0	18 4.0	17 36.9	- 7 33.4	-0.9550	.6006	.1215	-28	-90	
ρ Sagittarii	5 $\frac{1}{2}$	3.14 10.0	18 31.5	17 40.1	- 7 30.4	-0.4946	.6006	.1216	- 1	-71	
B. A. C. 6658	6	+3.15 +10.5	-18 35.7	20 7.0	- 5 9.3	-0.1199	.5996	+1.269	+20	-45	
Lalande 36857	6 $\frac{1}{2}$	3.17 10.6	19 37.9	21 31.3	- 3 48.3	+1.0892	.5991	.1299	+71	+29	
g Sagittarii	5 $\frac{1}{2}$	3.12 13.0	15 48.1	22 7 59.6	+ 6 15.2	-1.2379	.5941	.1510	-51	-90	
B. A. C. 6992	6 $\frac{1}{2}$	3.15 14.6	15 9.3	17 11.9	- 8 53.8	-0.4133	.5893	.1675	+ 9	-64	
β Capricorni	3	3.15 14.6	15 9.1	17 17.2	- 8 48.8	-0.3998	.5893	.1676	+ 9	-63	
B. A. C. 7063	6	+3.18 +15.3	-15 26.9	21 23.8	- 4 51.6	+0.5953	.5870	+1.744	+68	- 5	
B. A. C. 7087	6	3.16 15.7	14 7.5	22 41.5	- 3 36.8	-0.4906	.5863	.1764	+ 5	-70	
τ Capricorni	6	3.19 15.7	15 33.2	23 57.9	- 2 23.3	+1.1529	.5855	.1783	+75	+33	
τ Capricorni	5	3.19 15.8	15 22.0	23 0 45.7	- 1 37.3	+1.1099	.5851	.1795	+75	+29	
B. A. C. 7221	6 $\frac{1}{2}$	3.18 17.0	12 58.8	5 31.1	+ 2 57.3	-0.3890	.5823	.1863	+12	-62	
B. A. C. 7242	6 $\frac{1}{2}$	+3.17 +17.2	-12 1.1	6 31.9	+ 3 55.9	-1.1548	.5818	+1.877	-37	-90	
8 Aquarii	6	3.21 17.3	13 30.4	9 21.6	+ 6 39.3	+0.8600	.5802	.1914	+77	+10	
ν Aquarii	4 $\frac{1}{2}$	3.21 18.1	11 50.8	13 26.5	+10 35.1	+0.0039	.5779	.1964	+34	-38	
17 Aquarii	6	3.22 19.4	9 49.2	19 7.9	- 7 56.0	-0.8764	.5748	.2027	-14	-90	
19 Aquarii	6	3.24 19.4	10 14.9	20 5.8	- 7 0.3	-0.2552	.5742	.2037	+21	-53	
ξ Aquarii	4 $\frac{1}{2}$	3.25 20.4	8 22.9	24 1 29.2	- 1 45.6	-1.0030	.5713	.2087	-21	-90	
B. A. C. 7562	6 $\frac{1}{2}$	+3.29 +20.5	- 9 34.6	4 34.5	+ 1 10.1	+0.8381	.5696	+2.115	+81	+ 8	
ϵ Capricorni	6	3.29 20.5	9 37.4	4 36.7	+ 1 12.2	+0.8907	.5696	.2115	+81	+11	
ϵ Capricorni	6 $\frac{1}{2}$	3.29 20.5	9 49.1	5 9.6	+ 1 43.9	+1.1487	.5693	.2119	+81	+31	
30 Aquarii	5 $\frac{1}{2}$	3.32 21.9	7 5.5	12 36.2	+ 8 54.6	+0.0780	.5658	.2170	+41	-34	
B. A. C. 7744	6	3.34 22.8	5 18.0	16 47.5	-11 2.9	-0.7989	.5639	.2194	- 7	-90	
44 Aquarii	6	+3.37 +22.8	- 5 58.5	18 43.1	- 9 11.3	+0.2993	.5630	+2.204	+55	-22	

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

December.

Star's—					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1881.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
51 Aquarii	6	+3.40	+23.2	- 5 25.9	24 21 49.9	- 6 11.1	+0.4443	.5617	+2218	+65	-14
κ Aquarii	5	3.46	23.7	4 50.1	25 3 56.2	- 0 17.5	+1.2064	.5592	.2236	+85	+34
3 Piscium	6	3.55	25.6	- 0 26.7	14 16.6	+ 9 41.7	-0.8890	.5559	.2250	-11	-90
κ Piscium	4 $\frac{1}{2}$	3.69	26.1	+ 0 36.7	26 2 16.1	- 2 43.1	+0.7362	.5529	.2238	+90	+ 2
9 Piscium	6	3.69	26.0	0 28.6	2 24.7	- 2 34.8	+0.9053	.5629	.2238	+90	+12
Yarnall 10387	7	+3.71	+26.4	+ 1 43.0	4 11.1	- 0 52.0	+0.0448	.5526	+2235	+41	-36
16 Piscium	6	3.74	26.3	1 27.0	6 37.2	+ 1 29.2	+0.8588	.5521	.2227	+90	+ 9
19 Piscium	6	3.81	26.8	2 50.1	11 12.9	+ 5 55.7	+0.4724	.5515	.2210	+68	-13
36 Piscium	6 $\frac{1}{2}$	4.01	27.9	7 35.2	27 1 7.4	- 4 37.7	-1.3536	.5504	.2135	-59	-83
δ Piscium	5 $\frac{1}{2}$	4.04	27.8	7 32.2	2 59.0	- 2 49.8	-0.9067	.5504	.2123	-12	-83
45 Piscium	6	+4.06	+27.5	+ 7 2.5	5 20.1	- 0 33.4	+0.0982	.5503	+2105	+44	-31
101 Piscium	6	4.66	26.6	14 3.6	28 13 30.2	+ 6 32.2	-0.8586	.5534	.1780	-10	-76
104 Piscium	6 $\frac{1}{2}$	4.68	26.3	13 41.4	15 5.4	+ 8 4.1	-0.1934	.5537	.1760	+27	-44
19 Arietis	6	4.93	23.9	14 43.7	29 6 24.6	- 1 7.8	+1.2592	.5569	.1543	+90	+52
27 Arietis	6	5.12	23.1	17 11.0	14 25.1	+ 6 36.2	-0.1314	.5586	.1415	+31	-36
B. A. C. 782	6 $\frac{1}{2}$	+5.18	+23.2	+18 21.7	15 36.8	+ 7 45.5	-1.2028	.5589	+1396	-40	-72
40 Arietis	6	5.27	21.5	17 47.6	22 18.2	- 9 48.0	+0.2898	.5601	.1283	+57	-12
π Arietis, <i>mult.</i>	5 $\frac{1}{2}$	5.26	21.3	16 58.5	22 39.3	- 9 26.5	+1.2003	.5601	.1277	+90	+48
ρ^2 Arietis	6	5.31	20.9	17 51.3	30 1 33.0	- 6 38.8	+0.6342	.5606	.1226	+85	+ 7
ρ^3 Arietis	6	5.31	20.7	17 33.2	1 49.0	- 6 23.4	+0.9847	.5607	.1220	+90	+29
54 Arietis	6 $\frac{1}{2}$	+5.42	+19.4	+18 20.5	7 7.2	- 1 16.2	+0.7747	.5615	+1125	+90	+17
δ Arietis	4 $\frac{1}{2}$	5.47	19.3	19 16.9	8 33.2	+ 0 6.8	-0.0594	.5618	.1099	+35	-29
B. A. C. 1032	6 $\frac{1}{2}$	5.57	18.6	20 4.9	12 38.4	+ 4 3.5	-0.4756	.5624	.1023	+12	-53
τ^1 Arietis	5	5.59	18.8	20 43.3	12 47.4	+ 4 12.1	-1.1395	.5624	.1021	-35	-70
τ^2 Arietis	6	5.58	18.4	20 19.2	13 28.6	+ 4 52.0	-0.6529	.5625	.1008	+ 1	-66
65 Arietis	6	+5.59	+18.3	+20 23.1	14 13.0	+ 5 34.9	-0.6390	.5626	+0.993	+ 2	-65
13 Tauri	5 $\frac{1}{2}$	5.66	16.0	19 19.4	22 8.2	-10 46.5	+1.2187	.5638	.0838	+90	+55
B. A. C. 1143	7	5.71	16.0	20 33.2	23 3.7	- 9 53.0	-0.0160	.5639	.0822	+37	-23
B. A. C. 1242	6	5.77	14.0	19 52.2	31 6 24.7	- 2 47.5	+1.2656	.5648	.0675	+90	+64
A ¹ Tauri	4 $\frac{1}{2}$	5.88	13.3	21 45.5	7 56.9	- 1 18.6	-0.6516	.5649	.0644	+ 1	-63
A ² Tauri	6	+5.87	+13.2	+21 41.5	8 13.5	- 1 2.5	-0.5614	.5649	+0.639	+ 6	-56
B. A. C. 1289	7	5.93	12.3	22 6.7	11 32.3	+ 2 9.3	-0.8117	.5650	.0572	- 9	-68
ω^2 Tauri	5 $\frac{1}{2}$	5.87	11.4	20 17.3	13 31.0	+ 4 3.9	+1.2503	.5651	.0531	+90	+62
51 Tauri	7	5.92	11.5	21 17.5	13 59.0	+ 4 30.9	+0.1993	.5651	.0528	+50	- 9
53 Tauri	6 $\frac{1}{2}$	5.90	11.3	20 51.4	14 27.5	+ 4 58.4	+0.6900	.5652	.0511	+90	+18
56 Tauri	6 $\frac{1}{2}$	+5.93	+11.3	+21 29.3	14 31.4	+ 5 2.1	+0.0167	.5652	+0.510	+39	-19
κ^1 Tauri	5 $\frac{1}{2}$	5.99	10.7	22 1.4	17 2.2	+ 7 27.6	-0.4360	.5652	.0458	+13	-45
κ^2 Tauri	6 $\frac{1}{2}$	5.98	10.7	21 55.8	17 3.7	+ 7 29.1	-0.3354	.5652	.0456	+19	-39
ν^1 Tauri	4 $\frac{1}{2}$	6.01	10.7	22 32.7	17 26.5	+ 7 51.1	-0.9774	.5652	.0449	-21	-68
ν^2 Tauri	6	6.02	10.6	22 43.7	17 53.0	+ 8 16.7	-1.1545	.5652	.0441	-38	-68
B. A. C. 1373	7	+5.97	+10.2	+21 21.5	18 13.2	+ 8 36.1	+0.3298	.5652	+0.433	+59	- 1

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT
WASHINGTON, D. C., DURING THE YEAR 1881.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Oc- cultation.
			Washington		Angle from		Washington		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Ver- tex.	Sidereal Time.	Mean Time.	North Point.	Ver- tex.	
Jan.	7 101 Piscium	6	^h 2 ^m 32	^h 7 ^m 21	64°	38°	^h 3 ^m 56	^h 8 ^m 45	247°	202°	^h 1 ^m 24
	8 B. A. C. 782	6½	7 22	12 7	66	11	8 22	13 7	276	223	1 0
	9 ζ Arietis	4½	0 42	5 24	51	103	2 4	6 45	266	301	1 21
	9 γ Arietis	5	5 26	10 7	145	95	6 3	10 44	198	144	0 38
	13 ζ Geminor., mult.†	4	14 4	18 28	73	25	14 47	19 11	317	273	0 43
	14 γ Geminorum	5½	10 8	14 28	80	30	11 9	15 30	330	275	1 2
	17 Weissæ IX, 1035†	7	2 50	7 0	74	123	3 38	7 48	324	375	0 48
	18 36 Sextantis	6	5 12	9 18	66	117	5 55	10 0	346	35	0 43
	18 B. A. C. 3726	6	10 49	14 53	155	154	12 3	16 8	277	254	1 14
	18 55 Leonis	6	13 16	17 21	91	54	14 21	18 25	332	287	1 4
	19 ε Leonis	5	6 1	10 2	205	256	Star 1'1.	south of	♌'s	limb.	
	24 B. A. C. 5335	6½	12 37	16 17	62	100	13 28	17 9	330	0	0 51
24 B. A. C. 5354	6½	14 17	17 58	36	57	14 34	18 14	2	21	0 17	
Feb.	2 45 Piscium	6	3 49	6 56	149	102	3 58	7 5	160	112	0 8
	6 32 Tauri	6	6 17	9 8	54	30	7 35	10 26	271	214	1 18
	6 Α Tauri	4½	10 55	13 45	181	132	Star 6'7.	south of	♌'s	limb.	
	8 B. A. C. 1774	6½	4 16	6 59	98	139	5 52	8 34	267	254	1 35
	8 B. A. C. 1801	6	7 17	9 59	105	57	8 41	11 24	277	220	1 24
	11 B. A. C. 2731	6½	4 11	6 42	97	151	5 33	8 4	295	344	1 21
	12 B. A. C. 3122	6½	13 33	15 50	121	68	14 35	17 1	291	239	1 1
	15 ε Leonis	5	15 31	17 45	78	31	16 23	18 37	333	283	0 51
	18 85 Virginis†	6	8 0	10 3	106	157	8 58	11 1	304	351	0 58
	21 B. A. C. 5571*	7	11 37	13 28	192	143	Star 6'5.	south of	♌'s	limb.	
	21 B. A. C. 5623	6½	14 14	16 3	132	162	15 20	17 10	247	264	1 7
	21 18 Ophiuchi	6	15 13	17 3	151	170	16 2	17 52	223	232	0 49
Mar.	22 B. A. C. 6023	6½	13 54	15 40	112	153	15 2	16 49	254	266	1 8
	23 30 Sagittarii†	6	13 30	15 13	40	90	14 12	15 54	315	1	0 41
	23 31 Sagittarii	6	14 27	16 9	357	42	Star 9'0.	north of	♌'s	limb.	
	6 ν Tauri	4½	4 34	5 35	109	99	5 59	7 0	244	196	1 25
	6 μ Tauri	6	5 17	6 17	72	38	6 41	7 42	285	231	1 25
	8 γ Geminorum	3½	6 50	7 43	71	44	8 6	8 58	316	265	1 15
	9 ζ Geminor., mult.	4	5 36	6 24	119	159	7 8	7 57	271	264	1 32
	10 3 Cancri	6	11 9	11 53	68	15	11 57	12 41	342	287	0 48
	12 Α Leonis	6	8 35	9 12	130	149	10 3	10 39	295	281	1 27
	13 Weissæ X, 315	6½	14 39	15 11	97	58	15 39	16 10	316	265	0 59
	14 ρ Leonis	6	8 36	9 4	185	222	9 13	9 41	240	269	0 37
	17 83 Virginis	6	17 49	18 4	138	93	18 44	18 59	253	204	0 55
20 ρ Ophiuchi, mult.	5	11 57	12 1	52	97	12 38	12 42	335	375	0 41	
21 B. A. C. 5868*	6½	11 58	11 58	187	237	Star 1'4.	south of	♌'s	limb.		
21 δ Ophiuchi, var.†	5	12 7	12 7	141	191	12 52	12 52	234	220	0 45	
Apr.	21 ε Ophiuchi	5	14 20	14 20	70	105	15 25	15 25	299	323	1 5
	25 Yarnall 9373†	6½	15 32	15 16	117	168	16 13	15 57	207	256	0 41
	2 Α Tauri	4½	5 53	5 8	110	60	7 11	6 25	245	189	1 18
	2 Α Tauri	6	6 29	5 44	132	78	7 25	6 40	225	168	0 56
	2 B. A. C. 1281	6	10 43	9 57	2	313	Star 0'8.	north of	♌'s	limb.	
	4 141 Tauri	6	12 4	11 10	12	320	Star 2'1.	north of	♌'s	limb.	
	9 14 Sextantis†	6	14 49	13 34	133	82	15 47	14 33	278	227	0 58
	10 B. A. C. 3726	6	14 22	13 3	95	49	15 24	14 6	320	271	1 2
	10 55 Leonis†	6	16 32	15 14	55	4	17 3	15 44	351	300	0 30
	11 ε Leonis	5	8 39	7 18	211	249	Star 0'2.	south of	♌'s	limb.	
	12 γ Virginis*	6	18 24	16 57	19	328	Star 0'2.	north of	♌'s	limb.	
	May	14 B. A. C. 4722	6	16 2	14 27	104	79	17 18	15 43	290	254
17 39 Ophiuchi, mult.		6	18 4	16 18	167	155	18 18	16 31	186	172	0 13
17 B. A. C. 5831		6	17 37	15 50	98	93	18 55	17 9	253	231	1 19
18 B. A. C. 6222		6½	18 42	16 51	76	71	20 1	18 10	258	236	1 19
5 α Cancri		4	13 15	10 18	176	123	13 48	10 52	237	184	0 33
7 Weissæ X, 315		6½	9 41	6 37	104	117	11 3	7 59	326	309	1 22

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT
WASHINGTON, D. C., DURING THE YEAR 1881.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of calculation.
			Washington		Angle from		Washington		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
May 11	83 Virginis	6	13 20	10 0	208	212	Star 0°7	south of	♂'s	limb.	
11	85 Virginis	6	13 1	9 41	66	75	13 54	10 34	347	344	0 52
13	Anonymous	6½	10 54	7 26	110	157	11 57	8 29	286	325	1 3
15	B. A. C. 5989*	7	11 44	8 8	147	199	12 19	8 43	223	273	0 35
16	31 Sagittarii†	6	13 48	10 8	135	183	14 30	10 50	219	263	0 42
16	33 Sagittarii	6	15 5	11 25	356	37	Star 2°9	north of	♂'s	limb.	
18	9 Aquarii	6	19 37	15 48	98	116	20 42	16 53	207	210	1 5
21	16 Piscium	6	18 32	14 31	136	186	19 25	15 25	209	256	0 53
June 2	♂ Leonis	6	14 27	9 41	153	101	15 15	10 29	257	205	0 48
4	55 Leonis	6	12 37	7 42	33	3	Star 1°5	north of	♂'s	limb.	
8	B. A. C. 4722	6	14 1	8 51	110	112	15 24	10 14	294	278	1 23
8	B. A. C. 4739	6	16 35	11 25	165	135	17 14	12 4	227	191	0 39
10	ρ Ophiuchi, mult.	5	19 40	14 21	66	28	20 41	15 22	289	244	1 1
11	B. A. C. 5831	6	13 36	8 13	152	192	14 15	8 52	222	256	0 39
11	B. A. C. 5862	7	16 19	10 56	74	87	17 36	12 13	284	280	1 17
11	B. A. C. 5868	6½	17 29	12 6	178	175	Star 3°4	south of	♂'s	limb.	
11	♂ Ophiuchi, var.	5	18 10	12 47	176	165	Star 0°4	south of	♂'s	limb.	
11	♂ Ophiuchi	5	20 25	15 2	140	105	20 59	15 36	200	160	0 34
12	B. A. C. 6222†	6½	13 8	7 42	134	183	13 52	8 26	227	272	0 44
14	♂ Capricorni	6	18 59	13 24	19	39	19 52	14 17	294	303	0 53
14	♂ Capricorni	5	20 7	14 32	26	32	21 7	15 32	283	274	1 0
17	κ Piscium	4½	22 52	17 5	136	145	23 5	17 18	155	160	0 13
28	29 Cancri†	6	15 23	8 54	149	101	16 4	9 35	250	205	0 40
July 2	♂ Leonis	5	17 1	10 16	22	331	Star 4°6	north of	♂'s	limb.	
8	22 Ophiuchi	6½	19 16	12 7	356	326	Star 5°0	north of	♂'s	limb.	
10	B. A. C. 6539	6	20 43	13 25	83	61	21 50	14 33	237	204	1 8
10	π Sagittarii	3	21 16	13 59	90	62	22 19	15 2	230	192	1 3
12	9 Aquarii†	6	15 4	7 40	85	136	16 1	8 37	244	292	0 57
18	27 Arietis	6	20 17	12 28	20	72	20 54	13 5	299	353	0 37
20	51 Tauri	7	21 24	13 27	168	218	Star 4°2	south of	♂'s	limb.	
20	56 Tauri	6½	21 40	13 43	127	178	22 17	14 20	208	261	0 37
20	κ' Tauri	5½	0 23	16 25	73	130	1 39	17 42	260	315	1 16
20	κ' Tauri	6½	0 23	16 25	94	151	1 36	17 38	239	294	1 13
22	B. A. C. 1970	6½	0 32	16 27	357	52	Star 5°4	north of	♂'s	limb.	
Aug. 4	ρ Ophiuchi, mult.	5	18 26	9 31	96	70	19 40	10 44	262	224	1 13
5	B. A. C. 5862	7	16 18	7 19	106	119	17 38	8 39	283	249	1 19
8	♂ Capricorni	6	19 28	10 17	1	15	19 59	10 48	312	320	0 31
8	♂ Capricorni	5	20 31	11 20	10	10	21 15	12 4	298	288	0 45
9	B. A. C. 7562	6½	0 1	14 46	47	15	1 5	15 49	254	213	1 4
9	♂ Capricorni	6	0 0	14 44	57	25	1 5	15 49	244	203	1 5
9	♂ Capricorni	6½	0 54	15 38	151	112	Star 1°0	south of	♂'s	limb.	
11	κ Piscium	4½	18 26	9 3	355	45	18 43	9 26	313	2	0 22
11	9 Piscium	6	15 11	8 48	43	93	19 7	9 44	266	314	0 56
11	16 Piscium	6	23 30	14 7	111	111	0 15	14 52	183	169	0 45
15	δ Arietis	4½	23 14	13 35	59	114	0 26	14 47	258	309	1 12
31	δ Scorpis	2½	16 3	5 22	90	89	17 29	6 48	282	262	1 26
Sept. 2	B. A. C. 6088	6	17 22	6 33	14	21	17 51	7 2	334	335	0 29
3	B. A. C. 6539	6	20 3	9 10	135	122	20 39	9 46	189	168	0 36
3	π Sagittarii	3	20 55	10 2	161	137	Star 5°8	south of	♂'s	limb.	
11	40 Arietis	6	23 16	11 50	66	120	0 30	13 4	248	295	1 14
14	♂ Tauri†	6	21 26	9 49	78	121	22 18	10 40	271	350	0 52
15	B. A. C. 2039*	6½	22 19	10 38	42	85	22 55	11 13	317	4	0 35
15	15 Geminor., mult.	6	1 22	13 40	160	216	1 45	14 3	199	255	0 23
Oct. 3	B. A. C. 7562	6½	22 45	9 53	62	46	23 58	11 6	237	205	1 13
3	♂ Capricorni	6	22 45	9 53	73	57	23 56	11 4	226	194	1 12
4	κ Aquarii	5	21 6	8 10	117	139	21 46	8 50	180	192	0 40
5	κ Piscium	4½	18 41	5 51	335	25	Star 1°3	north of	♂'s	limb.	

**OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT
WASHINGTON, D. C., DURING THE YEAR 1881.**

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of eclipsation.
			Washington		Angle from		Washington		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Ver- tex.	Sidereal Time.	Mean Time.	North Point.	Ver- tex.	
Oct. 5	9 Piscium	6	^h 18 ^m 26	^h 5 ^m 27	33	83	^h 19 ^m 18	^h 6 ^m 18	276	324	^h 0 ^m 52
5	16 Piscium	6	23 44	10 44	97	96	0 43	11 43	199	181	0 59
5	19 Piscium†	6	5 29	16 28	77	26	6 24	17 23	239	189	0 55
9	54 Arietis†	6½	19 11	5 56	78	122	20 0	6 45	251	300	0 49
10	51 Tauri	7	1 44	12 24	69	121	3 6	13 46	266	301	1 23
10	56 Tauri	6½	2 42	13 22	38	80	3 47	14 27	301	318	1 5
10	B. A. C. 1373	7	7 49	18 28	107	51	8 56	19 35	258	202	1 7
11	ε Tauri*	5	20 51	7 28	106	148	21 37	8 14	240	287	0 46
11	105 Tauri	6	22 47	9 24	110	162	23 39	10 15	233	288	0 51
11	π Tauri	6	5 9	15 44	86	88	6 38	17 14	280	237	1 29
18	55 Leonis*	6	4 44	14 52	201	252	Star 0'1	south of	♄'s	limb.	
29	B. A. C. 7063	6	23 9	8 35	63	29	0 15	9 41	245	203	1 6
31	51 Aquarii	6	1 32	10 50	65	24	2 36	11 54	240	193	1 4
Nov. 5	40 Arietis	6	22 38	7 36	339	34	Star 1'1	north of	♄'s	limb.	
5	ρ Arietis	6	2 30	11 28	161	172	Star 0'7	south of	♄'s	limb.	
5	54 Arietis	6½	9 29	18 26	175	124	Star 2'8	south of	♄'s	limb.	
10	B. A. C. 2432†	6½	23 24	8 3	92	136	0 21	9 0	278	327	0 57
10	f Geminorum	6	9 54	18 31	23	335	Star 1'9	north of	♄'s	limb.	
29	19 Piscium	6	21 23	4 47	18	55	22 21	5 45	279	304	0 57
Dec. 4	51 Tauri	7	23 10	6 14	347	43	Star 4'6	north of	♄'s	limb.	
4	53 Tauri	6½	23 1	6 5	110	165	23 55	6 59	223	279	0 54
4	B. A. C. 1373	7	8 54	10 58	96	112	5 21	12 25	253	220	1 27
5	π Tauri	6	1 45	8 44	8	65	2 3	9 3	339	35	0 18
5	ο Tauri	6	6 32	13 31	78	40	7 51	14 50	297	243	1 19
6	15 Geminor., mult.	6	10 40	17 35	16	320	Star 3'3	north of	♄'s	limb.	
6	16 Geminorum	6	10 24	17 18	98	42	11 27	18 22	293	238	1 4
6	ν Geminorum	4½	11 12	18 7	148	92	11 57	18 51	242	188	0 45
8	5 Cancri	6	4 51	11 39	35	87	5 21	12 8	355	44	0 29
9	60 Cancri	6	11 7	17 50	151	122	Star 2'0	south of	♄'s	limb.	
9	α Cancri	4	11 59	18 42	53	5	12 31	19 13	2	311	0 32
11	Weisse X, 315	6½	9 55	16 30	34	84	Star 1'4	north of	♄'s	limb.	
12	ρ Leonis†	6	4 53	11 25	136	187	5 54	12 26	280	330	1 1
17	O. Arg. S., 14428†	6½	10 12	16 24	170	219	10 41	16 53	227	273	0 29
24	B. A. C. 7562	6½	22 46	4 31	108	92	23 34	5 20	191	164	0 48
24	c¹ Capricorni	6	22 56	4 42	128	109	23 23	5 9	171	145	0 27
26	19 Piscium*	6	6 30	12 7	96	46	7 14	12 51	225	178	0 44
30	54 Arietis	6½	0 54	6 16	168	125	Star 2'2	south of	♄'s	limb.	
31	51 Tauri	7	10 4	15 21	2	309	Star 1'8	north of	♄'s	limb.	
31	53 Tauri	6½	10 11	15 28	126	73	10 57	16 14	238	188	0 46

NOTES.—B. A. C., British Association Catalogue.

Runk., RUMKE's Catalogue.

Yar., YARNALL's Catalogue.

O. Arg. S., ORLTZEN's ARGELANDER's Catalogue.

Weisse, WEISSER's First Catalogue.

* Whole occultation below the horizon of Washington.

† Immersion below the horizon of Washington.

‡ Emersion below the horizon of Washington.

The angles of position are counted from the north point of the moon's limb, or from the vertex, towards the east, in a direction opposite to that in which the hands of a watch move.

458 JUPITER'S SATELLITES, 1881.

WASHINGTON MEAN TIME.

February.

d h m s	I. * Tr. In.	d h m s	II. Oc. Dis.	d h m s	II. Sh. In.
1 7 31	I. * Sh. In.	10 13 1	II. Ec. Re.	19 13 4	II. Tr. Eg.
8 43	I. * Tr. Eg.	17 51 52.6	I. Oc. Dis.	13 45	II. Sh. Eg.
9 46	I. Sh. Eg.	11 1 22	I. Ec. Re.	15 43	I. Oc. Dis.
10 57	II. Tr. In.	4 39 22.2	III. * Tr. In.	21 53	I. Ec. Re.
16 5		8 31		20 1 3 43.2	
				19 2	I. Tr. In.
18 30	II. Sh. In.	11 13	III. Tr. Eg.	20 1	I. Sh. In.
18 48	II. Tr. Eg.	13 9	III. Sh. In.	21 17	I. Tr. Eg.
21 9	II. Sh. Eg.	15 22	I. Tr. In.	22 14	I. Sh. Eg.
2 4 52	I. Oc. Dis.	22 31	I. Sh. In.	21 5 13	II. Oc. Dis.
8 14 57.8	I. * Ec. Re.	23 37			
				9 48 24.6	II. Ec. Re.
3 2 1	I. Tr. In.	19 0 46	I. Tr. Eg.	16 24	I. Oc. Dis.
3 12	I. Sh. In.	1 50	I. Sh. Eg.	19 32 32.7	I. Ec. Re.
4 16	I. Tr. Eg.	8 14	II. * Tr. In.	22 3 1	III. Oc. Dis.
5 26	I. Sh. Eg.	10 27	II. Sh. In.	5 41	III. Oc. Re.
10 15	II. Oc. Dis.	10 58	II. Tr. Eg.		
				7 13 37.2	III. * Ec. Dis.
15 14 28.9	II. Ec. Re.	13 6	I. Oc. Dis.	9 10 54.6	III. Ec. Re.
23 22	I. Oc. Dis.	19 52	I. Ec. Re.	13 32	I. Tr. In.
4 2 43 48.6	I. Ec. Re.	23 8 16.6	I. Tr. In.	14 30	I. Sh. In.
4 4 9	III. Tr. In.	13 17 2	I. Sh. In.	15 47	I. Tr. Eg.
6 52	III. * Tr. Eg.	18 6			
				16 43	I. Sh. Eg.
9 6	III. * Sh. In.	19 16	I. Tr. Eg.	23 0 26	II. Tr. In.
11 21	III. Sh. Eg.	20 19	I. Sh. Eg.	2 23	II. Sh. In.
20 31	I. Tr. In.	14 2 25	II. Oc. Dis.	3 9	II. Tr. Eg.
21 41	I. Sh. In.	7 10 49.3	II. * Ec. Re.	5 2	II. Sh. Eg.
22 46	I. Tr. Eg.	14 23	I. Oc. Dis.		
				10 54	I. Oc. Dis.
23 54	I. Sh. Eg.	17 37 7.4	I. Ec. Re.	14 1 25.5	I. Ec. Re.
5 5 28	II. Tr. In.	22 36	III. Oc. Dis.	24 8 3	I. * Tr. In.
7 49	II. * Sh. In.	15 1 17	III. Oc. Re.	8 59	I. Sh. In.
8 11	II. * Tr. Eg.	3 11 20.4	III. Ec. Dis.	10 17	I. Tr. Eg.
10 28	II. Sh. Eg.	5 9 52.0	III. Ec. Re.		
				11 12	I. Sh. Eg.
17 52	I. Oc. Dis.	11 32	I. Tr. In.	18 38	II. Oc. Dis.
21 12 44.4	I. Ec. Re.	12 35	I. Sh. In.	23 6 58.9	II. Ec. Re.
6 15 1	I. Tr. In.	13 46	I. Sh. Eg.	25 5 24	I. Oc. Dis.
16 10	I. Sh. In.	14 48	II. Tr. In.	8 30 12.5	I. * Ec. Re.
17 16	I. Tr. Eg.	21 38			
				17 21	III. Tr. In.
18 23	I. Sh. Eg.	23 46	II. Sh. In.	20 0	III. Tr. Eg.
23 38	II. Oc. Dis.	16 0 21	II. Tr. Eg.	21 15	III. Sh. In.
7 4 33 20.2	II. Ec. Re.	2 25	II. Sh. Eg.	23 26	III. Sh. Eg.
12 22	I. Oc. Dis.	8 53	I. * Oc. Dis.	26 2 33	I. Tr. In.
15 41 36.6	I. Ec. Re.	12 6 1.8	I. Ec. Re.		
				3 28	I. Sh. In.
18 14	III. Oc. Dis.	17 6 2	I. * Tr. In.	4 48	I. Tr. Eg.
20 56	III. Oc. Re.	7 4	I. * Sh. In.	5 41	I. Sh. Eg.
23 8 35.0	III. Ec. Dis.	8 16	I. * Tr. Eg.	13 51	II. Tr. In.
8 1 8 22.2	III. Ec. Re.	9 17	I. Sh. Eg.	15 41	II. Sh. In.
9 31	I. Tr. In.	15 49	II. Oc. Dis.		
				16 33	II. Tr. Eg.
10 39	I. Sh. In.	20 29 22.8	II. Ec. Re.	18 20	II. Sh. Eg.
11 46	I. Tr. Eg.	18 3 23	I. Oc. Dis.	23 55	I. Oc. Dis.
12 52	I. Sh. Eg.	6 34 50.1	I. * Ec. Re.	27 2 59 4.0	I. Ec. Re.
18 51	II. Tr. In.	12 55	III. Tr. In.	21 3	I. Tr. In.
21 8	II. Sh. In.	15 35	III. Tr. Eg.		
				21 57	I. Sh. In.
21 34	II. Tr. Eg.	17 12	III. Sh. In.	23 18	I. Tr. Eg.
23 47	II. Sh. Eg.	19 24	III. Sh. Eg.	28 0 10	I. Sh. Eg.
9 6 52	I. * Oc. Dis.	19 0 32	I. Tr. In.	8 3	II. * Oc. Dis.
10 10 32.5	I. Ec. Re.	1 33	I. Sh. In.		
				12 26 5.7	II. Ec. Re.
10 4 1	I. Tr. In.	2 47	I. Tr. Eg.	18 25	I. Oc. Dis.
5 8	I. Sh. In.	3 45	I. Sh. Eg.	21 27 52.3	I. Ec. Re.
6 16	I. * Tr. Eg.	11 2	II. Tr. In.		
7 21	I. * Sh. Eg.				

NOTE.—For Phases of Eclipses see pages 468 and 469.

In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; * Visible at Washington.

WASHINGTON MEAN TIME.

March.

d	h	m	s		d	h	m	s		d	h	m	s	
1	7	28		III.* Oc. Dis.	9	17	36		I. Tr. In.	16	8	55		II. Tr. In.
10	5			III. Oc. Re.	18	21			I. Sh. In.	10	13			II. Sh. In.
11	15	48.0		III. Ec. Dis.	19	50			I. Tr. Eg.	11	38			II. Tr. Eg.
13	11	52.4		III. Ec. Re.	20	34			I. Sh. Eg.	12	52			II. Sh. Eg.
15	34			I. Tr. In.	9	6	5		II. Tr. In.	16	59			I. Oc. Dis.
16	26			I. Sh. In.	7	37			II.* Sh. In.	19	47	1.2		I. Ec. Re.
17	48			I. Tr. Eg.	8	48			II. Tr. Eg.	17	14	8		I. Tr. In.
18	38			I. Sh. Eg.	10	16			II. Sh. Eg.	14	46			I. Sh. In.
2	3	15		II. Tr. In.	14	57			I. Oc. Dis.	16	23			I. Tr. Eg.
5	0			II. Sh. In.	17	51	55.6		I. Ec. Re.	16	58			I. Sh. Eg.
5	58			II. Tr. Eg.	10	12	6		I. Tr. In.	18	3	10		II. Oc. Dis.
7	39			II.* Sh. Eg.	12	50			I. Sh. In.	7	0	17.0		II.* Ec. Re.
12	55			I. Oc. Dis.	14	21			I. Tr. Eg.	11	29			I. Oc. Dis.
15	56	43.5		I. Ec. Re.	15	3			I. Sh. Eg.	14	15	43.9		I. Ec. Re.
3	10	4		I. Tr. In.	11	0	18		II. Oc. Dis.	19	6	49		III.* Tr. In.
10	54			I. Sh. In.	4	22	26.7		II. Ec. Re.	8	39			I. Tr. In.
12	19			I. Tr. Eg.	9	27			I. Oc. Dis.	9	14			I. Sh. In.
13	7			I. Sh. Eg.	12	20	39.8		I. Ec. Re.	9	21			III. Tr. Eg.
21	27			II. Oc. Dis.	12	2	19		III. Tr. In.	9	21			III. Sh. In.
4	1	44	40.6	II. Ec. Re.	4	54			III. Tr. Eg.	10	53			I. Tr. Eg.
7	26			I.* Oc. Dis.	5	19			III. Sh. In.	11	27			I. Sh. Eg.
10	25	29.2		I. Ec. Re.	6	37			I.* Tr. In.	11	30			III. Sh. Eg.
21	49			III. Tr. In.	7	19			I.* Sh. In.	22	20			II. Tr. In.
5	0	26		III. Tr. Eg.	7	29			III.* Sh. Eg.	23	31			II. Sh. In.
1	17			III. Sh. In.	8	51			I. Tr. Eg.	20	1	3		II. Tr. Eg.
3	27			III. Sh. Eg.	9	32			I. Sh. Eg.	2	10			II. Sh. Eg.
4	35			I. Tr. In.	19	30			II. Tr. In.	6	0			I. Oc. Dis.
5	23			I. Sh. In.	20	55			II. Sh. In.	8	44	30.5		I. Ec. Re.
6	49			I.* Tr. Eg.	22	13			II. Tr. Eg.	21	3	10		I. Tr. In.
7	36			I.* Sh. Eg.	23	34			II. Sh. Eg.	3	43			I. Sh. In.
16	40			II. Tr. In.	13	3	58		I. Oc. Dis.	5	24			I. Tr. Eg.
18	18			II. Sh. In.	6	49	28.1		I.* Ec. Re.	5	56			I. Sh. Eg.
19	23			II. Tr. Eg.	14	1	7		I. Tr. In.	16	36			II. Oc. Dis.
20	57			II. Sh. Eg.	1	48			I. Sh. In.	20	19	36.6		II. Ec. Re.
6	1	56		I. Oc. Dis.	3	22			I. Tr. Eg.	22	0	30		I. Oc. Dis.
4	54	19.1		I. Ec. Re.	4	0			I. Sh. Eg.	3	13	15.8		I. Ec. Re.
23	5			I. Tr. In.	13	44			II. Oc. Dis.	20	58			III. Oc. Dis.
23	59			I. Sh. In.	17	41	42.3		II. Ec. Re.	21	40			I. Tr. In.
7	1	19		I. Tr. Eg.	22	28			I. Oc. Dis.	22	11			I. Sh. In.
2	5			I. Sh. Eg.	15	1	18	13.6	I. Ec. Re.	23	54			I. Tr. Eg.
10	53			II. Oc. Dis.	16	27			III. Oc. Dis.	23	0	25		I. Sh. Eg.
15	3	52.0		II. Ec. Re.	19	0			III. Oc. Re.	1	15	54.6		III. Ec. Re.
20	26			I. Oc. Dis.	19	20	35.1		III. Ec. Dis.	11	46			II. Tr. In.
23	23	6.2		I. Ec. Re.	19	38			I. Tr. In.	12	50			II. Sh. In.
8	11	57		III. Oc. Dis.	20	17			I. Sh. In.	14	28			II. Tr. Eg.
14	32			III. Oc. Re.	21	14	16.1		III. Ec. Re.	15	28			II. Sh. Eg.
15	18	15.7		III. Ec. Dis.	21	52			I. Tr. Eg.	19	1			I. Oc. Dis.
17	13	8.1		III. Ec. Re.	22	29			I. Sh. Eg.	21	42	0.0		I. Ec. Re.

The Satellites are not visible from March 24 to May 21, Jupiter being too near the Sun.

460 JUPITER'S SATELLITES, 1881.

WASHINGTON MEAN TIME.

May.

d	h	m	s				d	h	m	s				d	h	m	s			
22	2	30		I.	Sh.	In.	25	15	28		I.	Sh.	In.	29	4	25		I.	Sh.	In.
3	1			I.	Tr.	In.	16	2			I.	Tr.	In.	5	3			I.	Tr.	In.
4	43			I.	Sh.	Eg.	17	40			I.	Sh.	Eg.	6	38			I.	Sh.	Eg.
5	14			I.	Tr.	Eg.	18	15			I.	Tr.	Eg.	7	16			I.	Tr.	Eg.
21	39			III.	Sh.	Ip.	26	11	38	5.8	III.	Ec.	Dis.	30	1	27		II.	Sh.	In.
22	52			II.	Sh.	In.	12	10			II.	Sh.	In.	1	41			III.	Sh.	In.
23	38			III.	Sh.	Eg.	12	45	10.7		I.	Ec.	Dis.	1	42	13.9		I.	Ec.	Dis.
23	45			III.	Tr.	In.	13	21			II.	Tr.	In.	2	45			II.	Tr.	In.
23	48	6.4		I.	Ec.	Dis.	13	21	15.6		III.	Ec.	Re.	3	39			III.	Sh.	Eg.
23	57			II.	Tr.	In.	13	51			III.	Oc.	Dis.	4	4			II.	Sh.	Eg.
23	1	30		II.	Sh.	Eg.	14	47			II.	Sh.	Eg.	4	16			III.	Tr.	In.
1	52			III.	Tr.	Eg.	15	31			I.	Oc.	Re.	4	31			I.	Oc.	Re.
2	30			I.	Oc.	Re.	15	56			III.*	Oc.	Re.	5	24			II.	Tr.	Eg.
2	36			II.	Tr.	Eg.	16	0			II.	Tr.	Eg.	6	20			III.	Tr.	Eg.
20	59			I.	Sh.	In.	27	9	56		I.	Sh.	In.	22	54			I.	Sh.	In.
21	32			I.	Tr.	In.	10	33			I.	Tr.	In.	23	34			I.	Tr.	In.
23	12			I.	Sh.	Eg.	12	9			I.	Sh.	Eg.	31	1	6		I.	Sh.	Eg.
23	45			I.	Tr.	Eg.	12	46			I.	Tr.	Eg.	1	46			I.	Tr.	Eg.
24	17	27	54.5	II.	Ec.	Dis.	28	6	46	17.2	II.	Ec.	Dis.	20	5	46.2		II.	Ec.	Dis.
18	16	38.1		I.	Ec.	Dis.	7	13	43.3		I.	Ec.	Dis.	20	10	44.4		I.	Ec.	Dis.
21	0			I.	Oc.	Re.	10	1			I.	Oc.	Re.	23	1			I.	Oc.	Re.
21	13			II.	Oc.	Re.	10	39			II.	Oc.	Re.							

June.

1	0	5		II.	Oc.	Re.	6	6	38		II.	Sh.	Eg.	11	12	1	49.8	II.	Ec.	Dis.
17	23			I.	Sh.	In.	7	40			III.	Sh.	Eg.	14	2			I.	Oc.	Re.
18	4			I.	Tr.	In.	8	11			II.	Tr.	Eg.	16	20			II.	Oc.	Re.
19	35			I.	Sh.	Eg.	8	46			III.	Tr.	In.	19	8	15		I.	Sh.	In.
20	17			I.	Tr.	Eg.	10	46			III.	Tr.	Eg.	9	6			I.	Tr.	In.
2	14	39	16.0	I.	Ec.	Dis.	7	0	49		I.	Sh.	In.	10	27			I.	Sh.	Eg.
14	44			II.	Sh.	In.	1	35			I.	Tr.	In.	11	18			I.	Tr.	Eg.
15	38	50.6		III.	Ec.	Dis.	3	1			I.	Sh.	Eg.	13	5	30	15.4	I.	Ec.	Dis.
16	9			I.	Tr.	In.	3	47			I.	Tr.	Eg.	6	36			II.	Sh.	In.
17	21			II.	Sh.	Eg.	22	4	46.5		I.	Ec.	Dis.	8	20			II.	Tr.	In.
17	21	6.8		III.	Ec.	Re.	22	43	32.5		II.	Ec.	Dis.	8	32			I.	Oc.	Re.
17	31			I.	Oc.	Re.	8	1	2		I.	Oc.	Re.	9	12			II.	Sh.	Eg.
18	20			III.	Oc.	Dis.	2	56			II.	Oc.	Re.	9	44			III.	Sh.	In.
18	48			II.	Tr.	Eg.	19	18			I.	Sh.	In.	10	58			II.	Tr.	Eg.
20	23			III.	Oc.	Re.	20	5			I.	Tr.	In.	11	41			III.	Sh.	Eg.
3	11	52		I.	Sh.	In.	21	30			I.	Sh.	Eg.	13	14			III.	Tr.	In.
12	34			I.	Tr.	In.	22	17			I.	Tr.	Eg.	15	11			III.*	Tr.	Eg.
14	4			I.	Sh.	Eg.	9	16	33	16.8	I.	Ec.	Dis.	14	2	44		I.	Sh.	In.
14	47			I.	Tr.	Eg.	17	18			II.	Sh.	In.	3	36			I.	Tr.	In.
4	9	7	47.4	I.	Ec.	Dis.	18	57			II.	Tr.	In.	4	56			I.	Sh.	Eg.
9	24	6.2		II.	Ec.	Dis.	19	32			I.	Oc.	Re.	5	48			I.	Tr.	Eg.
12	1			I.	Oc.	Re.	19	39	32.1		III.	Ec.	Dis.	23	58	44.3		I.	Ec.	Dis.
13	30			II.	Oc.	Re.	19	55			II.	Sh.	Eg.	15	1	21	12.7	II.	Ec.	Dis.
5	6	20		I.	Sh.	In.	21	20	56.5		III.	Ec.	Re.	3	2			I.	Oc.	Re.
7	5			I.	Tr.	In.	21	35			II.	Tr.	Eg.	5	46			II.	Oc.	Re.
8	32			I.	Sh.	Eg.	22	48			III.	Oc.	Dis.	21	12			I.	Sh.	In.
9	17			I.	Tr.	Eg.	10	0	47		III.	Oc.	Re.	22	6			I.	Tr.	In.
6	3	36	16.9	I.	Ec.	Dis.	13	47			I.	Sh.	In.	23	24			I.	Sh.	Eg.
4	1			II.	Sh.	In.	14	35			I.	Tr.	In.	16	0	18		I.	Tr.	Eg.
5	33			II.	Tr.	In.	15	58			I.	Sh.	Eg.	18	27	13.5		I.	Ec.	Dis.
5	43			III.	Sh.	In.	16	48			I.	Tr.	Eg.	19	53			II.	Sh.	In.
6	32			I.	Oc.	Re.	11	11	1	47.3	I.	Ec.	Dis.	21	32			I.	Oc.	Re.

NOTE.—For Phases of Eclipses see pages 468 and 469.

In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; * Visible at Washington.

JUPITER'S SATELLITES, 1881. 461

WASHINGTON MEAN TIME.

June.

d	h	m	s				d	h	m	s				d	h	m	s			
16	21	44		II.	Tr.	In.	21	4	38		I.	Sh.	In.	25	21	58		II.	Oc.	Re.
22	30			II.	Sh.	Eg.		5	36		I.	Tr.	In.	26	12	4		I.	Sh.	In.
23	40	34.9		III.	Ec.	Dis.		6	50		I.	Sh.	Eg.		13	6		I.	Tr.	In.
17	0	21		II.	Tr.	Eg.		7	48		I.	Tr.	Eg.		14	16		I.	* Sh.	Eg.
1	21	9.5		III.	Ec.	Re.	22	1	52	38.2	I.	Ec.	Dis.		15	18		I.	* Tr.	Eg.
3	15			III.	Oc.	Dis.		3	58	46.0	II.	Ec.	Dis.	27	9	18	1.5	I.	Ec.	Dis.
5	11			III.	Oc.	Re.		5	1		I.	Oc.	Re.		11	45		II.	Sh.	In.
15	41			I.	* Sh.	In.		8	35		II.	Oc.	Re.		12	31		I.	Oc.	Re.
16	36			I.	Tr.	In.		23	7		I.	Sh.	In.		13	53		II.	Tr.	In.
17	53			I.	Sh.	Eg.	23	0	6		I.	Tr.	In.		14	21		II.	* Sh.	Eg.
18	48			I.	Tr.	Eg.		1	19		I.	Sh.	Eg.		16	29		II.	Tr.	Eg.
18	12	55	43.0	I.	Ec.	Dis.		2	18		I.	Tr.	Eg.		17	46		III.	Sh.	In.
14	39	27.5		II.	Ec.	Dis.		20	21	6.5	I.	Ec.	Dis.		19	42		III.	Sh.	Eg.
16	2			I.	Oc.	Re.		22	27		II.	Sh.	In.		22	4		III.	Tr.	In.
19	10			II.	Oc.	Re.		23	31		I.	Oc.	Re.		23	55		III.	Tr.	Eg.
19	10	10		I.	Sh.	In.	24	0	30		II.	Tr.	In.	28	6	33		I.	Sh.	In.
11	6			I.	Tr.	In.		1	4		II.	Sh.	Eg.		7	35		I.	Tr.	In.
12	22			I.	Sh.	Eg.		3	7		II.	Tr.	Eg.		8	44		I.	Sh.	Eg.
13	18			I.	Tr.	Eg.		3	41	27.0	III.	Ec.	Dis.		9	47		I.	Tr.	Eg.
20	7	24	10.1	I.	Ec.	Dis.		5	21	19.4	III.	Ec.	Re.	29	3	46	29.2	I.	Ec.	Dis.
9	10			II.	Sh.	In.		7	40		III.	Oc.	Dis.		6	35	11.7	II.	Ec.	Dis.
10	31			I.	Oc.	Re.		9	33		III.	Oc.	Re.		7	0		I.	Oc.	Re.
11	7			II.	Tr.	In.		17	35		I.	Sh.	In.		11	22		II.	Oc.	Re.
11	47			II.	Sh.	Eg.		18	36		I.	Tr.	In.	30	1	1		I.	Sh.	In.
13	44			II.	Tr.	Eg.		19	47		I.	Sh.	Eg.		2	5		I.	Tr.	In.
13	45			III.	Sh.	In.		20	48		I.	Tr.	Eg.		3	13		I.	Sh.	Eg.
15	42			III.*	Sh.	Eg.	25	14	49	35.4	I.	* Ec.	Dis.		4	17		I.	Tr.	Eg.
17	40			III.	Tr.	In.		17	16	57.5	II.	Ec.	Dis.		22	14	56.8	I.	Ec.	Dis.
19	34			III.	Tr.	Eg.		18	1		I.	Oc.	Re.							

July.

1	1	2		II.	Sh.	In.	4	16	56		II.	Sh.	Eg.	8	13	21	49.0	III.	Ec.	Re.
1	30			I.	Oc.	Re.		19	14		II.	Tr.	Eg.		16	25		III.	Oc.	Dis.
3	15			II.	Tr.	In.		21	47		III.	Sh.	In.		18	11		III.	Oc.	Re.
3	39			II.	Sh.	Eg.		23	42		III.	Sh.	Eg.		21	24		I.	Sh.	In.
5	52			II.	Tr.	Eg.	5	2	26		III.	Tr.	In.		22	34		I.	Tr.	In.
7	42	48.6		III.	Ec.	Dis.		4	14		III.	Tr.	Eg.		23	36		I.	Sh.	Eg.
9	21	51.4		III.	Ec.	Re.		8	27		I.	Sh.	In.	9	0	46		I.	Tr.	Eg.
12	4			III.	Oc.	Dis.		9	34		I.	Tr.	In.		18	37	12.0	I.	Ec.	Dis.
13	53			III.	Oc.	Re.		10	39		I.	Sh.	Eg.		21	58		I.	Oc.	Re.
19	30			I.	Sh.	In.		11	47		I.	Tr.	Eg.		22	31	35.4	II.	Ec.	Dis.
20	35			I.	Tr.	In.	6	5	40	17.5	I.	Ec.	Dis.	10	3	32		II.	Oc.	Re.
21	41			I.	Sh.	Eg.		8	59		I.	Oc.	Re.		15	53		I.	* Sh.	In.
22	47			I.	Tr.	Eg.		9	13	29.7	II.	Ec.	Dis.		17	4		I.	Tr.	In.
2	16	43	25.1	I.	Ec.	Dis.		14	9		II.	* Oc.	Re.		18	4		I.	Sh.	Eg.
19	54	20.6		II.	Ec.	Dis.	7	2	56		I.	Sh.	In.		19	16		I.	Tr.	Eg.
20	0			I.	Oc.	Re.		4	4		I.	Tr.	In.	11	13	5	36.5	I.	Ec.	Dis.
3	0	46		II.	Oc.	Re.		5	7		I.	Sh.	Eg.		16	27		I.	Oc.	Re.
13	58			I.	Sh.	In.		6	16		I.	Tr.	Eg.		16	53		II.	Sh.	In.
15	5			I.	Tr.	In.	8	0	8	44.1	I.	Ec.	Dis.		19	21		II.	Tr.	In.
16	10			I.	Sh.	Eg.		3	28		I.	Oc.	Re.		19	30		II.	Sh.	Eg.
17	17			I.	Tr.	Eg.		3	36		II.	Sh.	In.		21	57		II.	Tr.	Eg.
4	11	11	50.2	I.	Ec.	Dis.		5	59		II.	Tr.	In.	12	1	48		III.	Sh.	In.
14	19			II.	* Sh.	In.		6	13		II.	Sh.	Eg.		3	42		III.	Sh.	Eg.
14	29			I.	* Oc.	Re.		8	36		II.	Tr.	Eg.		6	46		III.	Tr.	In.
16	37			II.	Tr.	In.		11	43	28.8	III.	Ec.	Dis.		8	30		III.	Tr.	Eg.

Ec. denotes eclipse; Oc., occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

July.

d	h	m	s	I.	Sh.	In.	d	h	m	s	I.	Sh.	In.	d	h	m	s	I.	Sh.	In.
12	10	22		I.	Sh.	In.	19	12	16		I.	Sh.	In.	26	0	44		II.	Tr.	In.
11	33			I.	Tr.	In.	12	44			III.	Tr.	Eg.	3	19			II.	Tr.	Eg.
12	33			I.	Sh.	Eg.	13	31			I.	* Tr.	In.	9	50			III.	Sh.	In.
13	45			I.	* Tr.	Eg.	14	27			I.	* Sh.	Eg.	11	43			III.	Sh.	Eg.
13	7	34	3.4	I.	Ec.	Dis.	15	43			I.	* Tr.	Eg.	14	10			I.	* Sh.	In.
10	57			I.	Oc.	Re.	20	9	27	48.0	I.	Ec.	Dis.	15	18			III.*	Tr.	In.
11	50	49.1		II.	Ec.	Dis.	12	54			I.	Oc.	Re.	15	29			I.	* Tr.	In.
16	55			II.	Oc.	Re.	14	27	39.5		II.	* Ec.	Dis.	16	21			I.	Sh.	Eg.
14	4	50		I.	Sh.	In.	17	0	25.3		II.	Ec.	Re.	16	56			III.	Tr.	Eg.
6	3			I.	Tr.	In.	17	3			II.	Oc.	Dis.	17	40			I.	Tr.	Eg.
7	2			I.	Sh.	Eg.	19	38			II.	Oc.	Re.	27	11	21	31.5	I.	Ec.	Dis.
8	15			I.	Tr.	Eg.	21	6	44		I.	Sh.	In.	14	50			I.	* Oc.	Re.
15	2	2	29.6	I.	Ec.	Dis.	8	1			I.	Tr.	In.	17	4	30.3		II.	Ec.	Dis.
5	26			I.	Oc.	Re.	8	56			I.	Sh.	Eg.	19	37	9.1		II.	Ec.	Re.
6	10			II.	Sh.	In.	10	12			I.	Tr.	Eg.	19	45			II.	Oc.	Dis.
8	42			II.	Tr.	In.	22	3	56	13.8	I.	Ec.	Dis.	22	21			II.	Oc.	Re.
8	47			II.	Sh.	Eg.	7	23			I.	Oc.	Re.	28	8	38		I.	Sh.	In.
11	18			II.	Tr.	Eg.	8	45			II.	Sh.	In.	9	58			I.	Tr.	In.
15	44	2.8		III.*	Ec.	Dis.	11	22			II.	Sh.	Eg.	10	50			I.	Sh.	Eg.
17	21	42.6		III.	Ec.	Re.	11	24			II.	Tr.	In.	12	10			I.	Tr.	Eg.
20	43			III.	Oc.	Dis.	13	59			II.	* Tr.	Eg.	29	5	49	57.0	I.	Ec.	Dis.
22	26			III.	Oc.	Re.	19	44	15.9		III.	Ec.	Dis.	9	19			I.	Oc.	Re.
23	19			I.	Sh.	In.	21	21	17.7		III.	Ec.	Re.	11	20			II.	Sh.	In.
16	0	32		I.	Tr.	In.	23	0	58		III.	Oc.	Dis.	13	57			II.	* Sh.	Eg.
1	30			I.	Sh.	Eg.	1	13			I.	Sh.	In.	14	4			II.	* Tr.	In.
2	44			I.	Tr.	Eg.	2	30			I.	Tr.	In.	16	39			II.	Tr.	Eg.
20	30	57.2		I.	Ec.	Dis.	2	38			III.	Oc.	Re.	23	44	29.8		III.	Ec.	Dis.
23	55			I.	Oc.	Re.	3	24			I.	Sh.	Eg.	30	1	20	56.0	III.	Ec.	Re.
17	1	8	41.7	II.	Ec.	Dis.	4	42			I.	Tr.	Eg.	3	7			I.	Sh.	In.
6	16			II.	Oc.	Re.	22	24	41.2		I.	Ec.	Dis.	4	28			I.	Tr.	In.
17	47			I.	Sh.	In.	24	1	52		I.	Oc.	Re.	5	10			III.	Oc.	Dis.
19	2			I.	Tr.	In.	3	45	39.0		II.	Ec.	Dis.	5	18			I.	Sh.	Eg.
19	59			I.	Sh.	Eg.	6	18	21.4		II.	Ec.	Re.	6	39			I.	Tr.	Eg.
21	14			I.	Tr.	Eg.	6	24			II.	Oc.	Dis.	6	46			III.	Oc.	Re.
18	14	59	21.1	I.	* Ec.	Dis.	8	59			II.	Oc.	Re.	31	0	18	24.2	I.	Ec.	Dis.
18	25			I.	Oc.	Re.	19	41			I.	Sh.	In.	3	48			I.	Oc.	Re.
19	28			II.	Sh.	In.	21	0			I.	Tr.	In.	6	22	26.7		II.	Ec.	Dis.
22	3			II.	Tr.	In.	21	53			I.	Sh.	Eg.	8	55	1.9		II.	Ec.	Re.
22	5			II.	Sh.	Eg.	23	11			I.	Tr.	Eg.	9	5			II.	Oc.	Dis.
19	0	39		II.	Tr.	Eg.	25	16	53	4.6	I.	Ec.	Dis.	11	41			II.	Oc.	Re.
5	48			III.	Sh.	In.	20	21			I.	Oc.	Re.	21	35			I.	Sh.	In.
7	43			III.	Sh.	Eg.	22	2			II.	Sh.	In.	22	57			I.	Tr.	In.
11	4			III.	Tr.	In.	26	0	40		II.	Sh.	Eg.	23	47			I.	Sh.	Eg.

August.

1	1	8		I.	Tr.	Eg.	2	17	26		I.	Tr.	In.	4	1	1		II.	Oc.	Re.
18	46	47.5		I.	Ec.	Dis.	18	15			I.	Sh.	Eg.	10	32			I.	Sh.	In.
22	17			I.	Oc.	Re.	19	29			III.	Tr.	In.	11	55			I.	Tr.	In.
2	0	37		II.	Sh.	In.	19	37			I.	Tr.	Eg.	12	44			I.	* Sh.	Eg.
3	14			II.	Sh.	Eg.	21	3			III.	Tr.	Eg.	14	6			I.	* Tr.	Eg.
3	23			II.	Tr.	In.	3	13	15	14.5	I.	* Ec.	Dis.	5	7	43	39.8	I.	Ec.	Dis.
5	53			II.	Tr.	Eg.	16	46			I.	Oc.	Re.	11	15			I.	Oc.	Re.
13	51			III.*	Sh.	In.	19	41	11.3		II.	Ec.	Dis.	13	54			II.	* Sh.	In.
15	44			III.*	Sh.	Eg.	22	13	42.9		II.	Ec.	Re.	16	31			II.	Tr.	In.
16	4			I.	* Sh.	In.	22	26			II.	Oc.	Dis.	16	41			II.	Sh.	Eg.

NOTE.—For Phases of Eclipses see pages 468 and 469.

In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; * Visible at Washington.

WASHINGTON MEAN TIME.

August.

d	h	m	s				d	h	m	s				d	h	m	s			
5	19	17		II.	Tr.	Eg.	14	14	7	53.8	II.	* Ec.	Re.	23	11	10		II.	* Tr.	In.
6	3	45	9.6	III.	Ec.	Dis.		14	23		II.	* Oc.	Dis.		13	43		II.	* Tr.	Eg.
	5	0		I.	Sh.	In.		16	57		II.	Oc.	Re.		21	46		I.	Sh.	In.
	5	21	3.0	III.	Ec.	Re.	15	1	23		I.	Sh.	In.		23	9		I.	Tr.	In.
	6	24		I.	Tr.	In.		2	47		I.	Tr.	In.		23	58		I.	Sh.	Eg.
	7	13		I.	Sh.	Eg.		3	35		I.	Sh.	Eg.	24	1	20		I.	Tr.	Eg.
	8	35		I.	Tr.	Eg.		4	58		I.	Tr.	Eg.		1	52		III.	Sh.	In.
	9	19		III.	Oc.	Dis.		22	34	14.5	I.	Ec.	Dis.		3	43		III.	Sh.	Eg.
	10	52		III.	Oc.	Re.	16	2	7		I.	Oc.	Re.		7	38		III.	Tr.	In.
7	2	12	7.3	I.	Ec.	Dis.		5	47		II.	Sh.	In.		9	3		III.	Tr.	Eg.
	5	44		I.	Oc.	Re.		8	23		II.	Sh.	Eg.		18	56	28.9	I.	Ec.	Dis.
	8	59	4.7	II.	Ec.	Dis.		8	36		II.	Tr.	In.		22	28		I.	Oc.	Re.
	11	31	32.7	II.	Ec.	Re.		11	10		II.	Tr.	Eg.	25	3	30	16.0	II.	Ec.	Dis.
	11	45		II.	Oc.	Dis.		19	51		I.	Sh.	In.		6	2	26.0	II.	Ec.	Re.
	14	20		II.	* Oc.	Re.		21	15		I.	Tr.	In.		6	15		II.	Oc.	Dis.
	23	29		I.	Sh.	In.		21	52		III.	Sh.	In.		8	49		II.	Oc.	Re.
8	0	53		I.	Tr.	In.		22	4		I.	Sh.	Eg.		16	14		I.	* Sh.	In.
	1	41		I.	Sh.	Eg.		23	26		I.	Tr.	Eg.		17	37		I.	Tr.	In.
	3	4		I.	Tr.	Eg.		23	43		III.	Sh.	Eg.		18	26		I.	Sh.	Eg.
	20	40	30.6	I.	Ec.	Dis.	17	3	39		III.	Tr.	In.		19	48		I.	Tr.	Eg.
9	0	12		I.	Oc.	Re.		5	7		III.	Tr.	Eg.	26	13	24	55.0	I.	* Ec.	Dis.
	3	12		II.	Sh.	In.		17	2	42.6	I.	Ec.	Dis.		16	56		I.	Oc.	Re.
	5	48		II.	Sh.	Eg.		20	35		I.	Oc.	Re.		21	40		II.	Sh.	In.
	6	0		II.	Tr.	In.	18	0	54	4.1	II.	Ec.	Dis.	27	0	15		II.	Sh.	Eg.
	8	35		II.	Tr.	Eg.		3	26	21.3	II.	Ec.	Re.		0	26		II.	Tr.	In.
	17	51		III.	Sh.	In.		3	41		II.	Oc.	Dis.		2	59		II.	Tr.	Eg.
	17	57		I.	Sh.	In.		6	15		II.	Oc.	Re.		10	43		I.	Sh.	In.
	19	22		I.	Tr.	In.		14	20		I.	* Sh.	In.		12	5		I.	* Tr.	In.
	19	44		III.	Sh.	Eg.		15	44		I.	* Tr.	In.		12	55		I.	* Sh.	Eg.
	20	10		I.	Sh.	Eg.		16	32		I.	* Sh.	Eg.		14	16		I.	* Tr.	Eg.
	21	32		I.	Tr.	Eg.		17	55		I.	Tr.	Eg.		15	47	17.7	III.	* Ec.	Dis.
	23	36		III.	Tr.	In.	19	11	31	8.4	I.	* Ec.	Dis.		17	21	39.9	III.	Ec.	Re.
10	1	7		III.	Tr.	Eg.		15	3		I.	* Oc.	Re.		21	23		III.	Oc.	Dis.
	15	8	58.0	I.	* Ec.	Dis.		19	4		II.	Sh.	In.		22	46		III.	Oc.	Re.
	18	41		I.	Oc.	Re.		21	40		II.	Sh.	Eg.	28	7	53	23.8	I.	Ec.	Dis.
	22	17	42.6	II.	Ec.	Dis.		21	53		II.	Tr.	In.		11	24		I.	* Oc.	Re.
	11	0	50	II.	Ec.	Re.	20	0	27		II.	Tr.	Eg.		16	48	1.4	II.	Ec.	Dis.
	1	5		II.	Oc.	Dis.		8	49		I.	Sh.	In.		19	20	7.8	II.	Ec.	Re.
	3	39		II.	Oc.	Re.		10	12		I.	Tr.	In.		19	31		II.	Oc.	Dis.
	12	26		I.	* Sh.	In.		11	1		I.	Sh.	Eg.		22	5		II.	Oc.	Re.
	13	50		I.	* Tr.	In.		11	46	43.3	III.	* Ec.	Dis.	29	5	11		I.	Sh.	In.
	14	38		I.	* Sh.	Eg.		12	23		I.	* Tr.	Eg.		6	33		I.	Tr.	In.
	16	1		I.	* Tr.	Eg.		13	21	39.7	III.	* Ec.	Re.		7	23		I.	Sh.	Eg.
12	9	37	23.6	I.	Ec.	Dis.		17	27		III.	Oc.	Dis.		8	44		I.	Tr.	Eg.
	13	10		I.	* Oc.	Re.		18	53		III.	Oc.	Re.	30	2	21	48.0	I.	Ec.	Dis.
	16	30		II.	Sh.	In.		5	59	36.6	I.	Ec.	Dis.		5	52		I.	Oc.	Re.
	19	5		II.	Sh.	Eg.	21	9	32		I.	Oc.	Re.		10	57		II.	* Sh.	In.
	19	18		II.	Tr.	In.		14	11	51.8	II.	* Ec.	Dis.		13	33		II.	* Sh.	Eg.
	21	53		II.	Tr.	Eg.		16	44	5.4	II.	Ec.	Re.		13	41		II.	* Tr.	In.
13	6	54		I.	Sh.	In.		16	58		II.	Oc.	Dis.		16	15		II.	* Tr.	Eg.
	7	45	40.5	III.	Ec.	Dis.		19	32		II.	Oc.	Re.		23	40		I.	Sh.	In.
	8	19		I.	Tr.	In.	22	3	17		I.	Sh.	In.	31	1	1		I.	Tr.	In.
	9	7		I.	Sh.	Eg.		4	40		I.	Tr.	In.		1	52		I.	Sh.	Eg.
	9	21	3.9	III.	Ec.	Re.		5	30		I.	Sh.	Eg.		3	12		I.	Tr.	Eg.
	10	30		I.	Tr.	Eg.		6	51		I.	Tr.	Eg.		5	52		III.	Sh.	In.
	13	24		III.	* Oc.	Dis.	23	0	28	0.2	I.	Ec.	Dis.		7	44		III.	Sh.	Eg.
	14	54		III.	* Oc.	Re.		4	0		I.	Oc.	Re.		11	33		III.	* Tr.	In.
14	4	5	51.3	I.	Ec.	Dis.		8	22		II.	Sh.	In.		12	54		III.	* Tr.	Eg.
	7	38		I.	Oc.	Re.		10	58		II.	Sh.	Eg.		20	50	17.7	I.	Ec.	Dis.
	11	35	33.0	II.	* Ec.	Dis.														

Ec. denotes eclipse; Oc., occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

464 JUPITER'S SATELLITES, 1881.

WASHINGTON MEAN TIME.

September.

d	h	m	s	I.	Oc.	Re.	d	h	m	s	I.	* Tr.	In.	d	h	m	s	II.	Sh.	Eg.
1	0	20		I.	Oc.	Re.	10	15	48		I.	* Tr.	In.	20	21	20		II.	Sh.	Eg.
	6	6	18.9	II.	Ec.	Dis.		16	43		I.	* Sh.	Eg.		23	37		II.	Tr.	Eg.
	8	38	21.9	II.	Ec.	Re.		18	0		I.	Tr.	Eg.	21	5	22		I.	Sh.	In.
	8	47		II.	Oc.	Dis.		23	47	35.9	III.	Ec.	Dis.		6	31		I.	Tr.	In.
	11	21		II.	* Oc.	Re.	11	1	21	27.3	III.	Ec.	Re.		7	35		I.	Sh.	Eg.
	18	8		I.	Sh.	In.		5	3		III.	Oc.	Dis.		8	42		I.	Tr.	Eg.
	19	29		I.	Tr.	In.		6	19		III.	Oc.	Re.		17	55		III.	Sh.	In.
	20	20		I.	Sh.	Eg.		11	41	7.2	I.	* Ec.	Dis.		19	45		III.	Sh.	Eg.
	21	40		I.	Tr.	Eg.		15	6		I.	* Oc.	Re.		22	49		III.	Tr.	In.
2	15	18	44.2	I.	Ec.	Dis.		21	59	54.1	II.	Ec.	Dis.	22	0	2		III.	Tr.	Eg.
	18	48		I.	Oc.	Re.	12	3	4		II.	Oc.	Re.		2	32	5.9	I.	Ec.	Dis.
3	0	14		II.	Sh.	In.		9	0		I.	Sh.	In.		5	49		I.	Oc.	Re.
	2	50		II.	Sh.	Eg.		10	15		I.	* Tr.	In.		13	53	38.7	II.	* Ec.	Dis.
	2	56		II.	Tr.	In.		11	12		I.	* Sh.	Eg.		18	42		II.	Oc.	Re.
	5	30		II.	Tr.	Eg.		12	29		I.	* Tr.	Eg.		23	51		I.	Sh.	In.
	12	37		I.	* Sh.	In.	13	6	9	32.8	I.	Ec.	Dis.	23	0	58		I.	Tr.	In.
	13	57		I.	* Tr.	In.		9	33		I.	Oc.	Re.		2	3		I.	Sh.	Eg.
	14	49		I.	* Sh.	Eg.		16	7		II.	* Sh.	In.		3	9		I.	Tr.	Eg.
	16	8		I.	* Tr.	Eg.		18	38		II.	Tr.	In.		21	0	35.4	I.	Ec.	Dis.
	19	47	28.9	III.	Ec.	Dis.		18	44		II.	Sh.	Eg.	24	0	16		I.	Oc.	Re.
	21	21	39.5	III.	Ec.	Re.		21	12		II.	Tr.	Eg.		8	1		II.	Sh.	In.
4	1	16		III.	Oc.	Dis.	14	3	28		I.	Sh.	In.		10	16		II.	* Tr.	In.
	2	35		III.	Oc.	Re.		4	43		I.	Tr.	In.		10	38		II.	* Sh.	Eg.
	9	47	13.7	I.	Ec.	Dis.		5	40		I.	Sh.	Eg.		12	48		II.	* Tr.	Eg.
	13	16		I.	* Oc.	Re.		6	54		I.	Tr.	Eg.		18	20		I.	Sh.	In.
	19	24	1.9	II.	Ec.	Dis.		13	54		III.	* Sh.	In.		19	25		I.	Tr.	In.
	21	56	1.5	II.	Ec.	Re.		15	45		III.	* Sh.	Eg.		20	32		I.	Sh.	Eg.
	22	2		II.	Oc.	Dis.		19	9		III.	Tr.	In.		21	36		I.	Tr.	Eg.
5	0	36		II.	Oc.	Re.		20	24		III.	Tr.	Eg.	25	7	48	34.7	III.	Ec.	Dis.
	7	5		I.	Sh.	In.	15	0	38	4.8	I.	Ec.	Dis.		9	21	56.7	III.	* Ec.	Re.
	8	25		I.	Tr.	In.		4	1		I.	Oc.	Re.		12	23		III.	* Oc.	Dis.
	9	17		I.	Sh.	Eg.		11	17	59.2	II.	* Ec.	Dis.		13	35		III.	* Oc.	Re.
	10	36		I.	* Tr.	Eg.		16	17		II.	* Oc.	Re.		15	29	8.9	I.	* Ec.	Dis.
6	4	15	38.4	I.	Ec.	Dis.		21	57		I.	Sh.	In.		18	43		I.	Oc.	Re.
	7	43		I.	Oc.	Re.		23	10		I.	Tr.	In.	26	3	11	17.3	II.	Ec.	Dis.
	13	32		II.	* Sh.	In.	16	0	9		I.	Sh.	Eg.		7	53		II.	Oc.	Re.
	16	8		II.	* Sh.	Eg.		1	21		I.	Tr.	Eg.		12	48		I.	* Sh.	In.
	16	10		II.	* Tr.	In.		19	6	33.4	I.	Ec.	Dis.		13	52		I.	* Tr.	In.
	18	45		II.	Tr.	Eg.		22	28		I.	Oc.	Re.		15	0		I.	* Sh.	Eg.
7	1	34		I.	Sh.	In.	17	5	25		II.	Sh.	In.		16	3		I.	* Tr.	Eg.
	2	53		I.	Tr.	In.		7	51		II.	Tr.	In.	27	9	57	37.0	I.	* Ec.	Dis.
	3	46		I.	Sh.	Eg.		8	2		II.	Sh.	Eg.		13	10		I.	* Oc.	Re.
	5	4		I.	Tr.	Eg.		10	25		II.	* Tr.	Eg.		21	19		II.	Sh.	In.
	9	53		III.	Sh.	In.		16	25		I.	* Sh.	In.		23	27		II.	Tr.	In.
	11	44		III.	* Sh.	Eg.		17	37		I.	* Tr.	In.		23	56		II.	Sh.	Eg.
	15	23		III.	* Tr.	In.		18	38		I.	Sh.	Eg.	28	1	59		II.	Tr.	Eg.
	16	42		III.	* Tr.	Eg.		19	48		I.	Tr.	Eg.		7	16		I.	Sh.	In.
	22	44	9.2	I.	Ec.	Dis.	18	3	47	48.5	III.	Ec.	Dis.		8	19		I.	* Tr.	In.
8	2	11		I.	Oc.	Re.		5	21	23.7	III.	Ec.	Re.		9	29		I.	* Sh.	Eg.
	8	42	12.9	II.	Ec.	Dis.		8	46		III.	Oc.	Dis.		10	30		I.	* Tr.	Eg.
	11	14	9.1	II.	* Ec.	Re.		9	59		III.	* Oc.	Re.		21	55		III.	Sh.	In.
	11	17		II.	* Oc.	Dis.		13	35	5.4	I.	* Ec.	Dis.		23	45		III.	Sh.	Eg.
	13	50		II.	* Oc.	Re.		16	55		I.	* Oc.	Re.	29	2	24		III.	Tr.	In.
	20	2		I.	Sh.	In.	19	0	35	39.1	II.	Ec.	Dis.		3	35		III.	Tr.	Eg.
	21	20		I.	Tr.	In.		5	29		II.	Oc.	Re.		4	26	12.3	I.	Ec.	Dis.
	22	14		I.	Sh.	Eg.		10	54		I.	* Sh.	In.		7	37		I.	Oc.	Re.
	23	32		I.	Tr.	Eg.		12	4		I.	* Tr.	In.		16	29	11.8	II.	* Ec.	Dis.
9	17	12	36.5	I.	Ec.	Dis.		13	6		I.	* Sh.	Eg.		21	3		II.	Oc.	Re.
	20	38		I.	Oc.	Re.		14	15		I.	* Tr.	Eg.	30	1	45		I.	Sh.	In.
10	2	50		II.	Sh.	In.	20	8	3	32.4	I.	Ec.	Dis.		2	45		I.	Tr.	In.
	5	24		II.	Tr.	In.		11	22		I.	* Oc.	Re.		3	57		I.	Sh.	Eg.
	5	26		II.	Sh.	Eg.		18	43		II.	Sh.	In.		4	56		I.	Tr.	Eg.
	7	59		II.	Tr.	Eg.		21	4		II.	Tr.	In.		22	54	43.0	I.	Ec.	Dis.
	14	31		I.	* Sh.	In.														

NOTE.—For Phases of Eclipses see pages 468 and 469.

In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; * Visible at Washington.

WASHINGTON MEAN TIME.

October.

d h m s			d h m s			d h m s			d h m s		
1 9 4	I. Oc. Re.		11 13 46	5.3	I. * Ec. Dis.	21 9 39			I. * Sh. Eg.		
10 37	II. * Sh. In.		16 43		I. * Oc. Re.	10 12			I. * Tr. Eg.		
12 38	II. * Tr. In.		12 2 32		II. Sh. In.	22 4 37	48.0		I. Ec. Dis.		
13 14	II. * Sh. Eg.		4 7		II. Tr. In.	7 20			I. * Oc. Re.		
15 10	II. * Tr. Eg.		5 9		II. Sh. Eg.	18 26			II. Sh. In.		
20 13	I. Sh. In.		6 40		II. Tr. Eg.	19 33			II. Tr. In.		
21 12	I. Tr. In.		11 4		I. * Sh. In.	21 3			II. Sh. Eg.		
22 26	I. Sh. Eg.		11 51		I. * Tr. In.	22 6			II. Tr. Eg.		
23 23	I. Tr. Eg.		13 17		I. * Sh. Eg.	23 1 56			I. Sh. In.		
2 11 49 13.0	III. * Ec. Dis.		14 9		I. * Tr. Eg.	2 28			I. Tr. In.		
13 22 25.2	III. * Ec. Re.		13 5 55		III. Sh. In.	4 7			I. Sh. Eg.		
15 56	III. * Oc. Dis.		7 45		III. * Sh. Eg.	4 38			I. Tr. Eg.		
17 6	III. * Oc. Re.		8 14 44.2		I. * Ec. Dis.	23 6 28.9			I. Ec. Dis.		
17 23 17.8	I. Ec. Dis.		9 19		III. * Tr. In.	23 51 53.1			III. Ec. Dis.		
20 30	I. Oc. Re.		10 28		III. * Tr. Eg.	24 1 24 54.7			III. Ec. Re.		
3 5 46 49.5	II. Ec. Dis.		11 9		I. * Oc. Re.	1 46			I. Oc. Re.		
10 13	II. * Oc. Re.		21 40	3.7	II. Ec. Dis.	2 6			III. Oc. Dis.		
14 42	I. * Sh. In.		14 1 41		II. Oc. Re.	3 17			III. Oc. Re.		
15 39	I. * Tr. In.		5 33		I. Sh. In.	13 33	1.6		II. * Ec. Dis.		
16 54	I. * Sh. Eg.		6 17		I. Tr. In.	17 4			II. * Oc. Re.		
17 50	I. * Tr. In.		7 45		I. * Sh. Eg.	20 25			I. Sh. In.		
4 11 51 47.6	I. * Ec. Dis.		8 28		I. * Tr. Eg.	20 54			I. Tr. In.		
14 57	I. * Oc. Re.		15 2 43 18.3		I. Ec. Dis.	22 36			I. Sh. Eg.		
23 55	II. Sh. In.		5 35		I. Oc. Re.	23 4			I. Tr. Eg.		
5 1 48	II. Tr. In.		15 50		II. * Sh. In.	25 17 35	4.5		I. * Ec. Dis.		
2 32	II. Sh. Eg.		17 16		II. * Tr. In.	20 12			I. Oc. Re.		
4 20	II. Tr. Eg.		18 27		II. Sh. Eg.	26 7 45			II. * Sh. In.		
9 10	I. * Sh. In.		19 49		II. Tr. Eg.	8 41			II. * Tr. In.		
10 5	I. * Tr. In.		16 0 1		I. Sh. In.	10 22			II. * Sh. Eg.		
11 22	I. * Sh. Eg.		0 44		I. Tr. In.	11 14			II. * Tr. Eg.		
12 16	I. * Tr. Eg.		2 13		I. Sh. Eg.	14 53			I. * Sh. In.		
6 1 55	III. Sh. In.		2 54		I. Tr. Eg.	15 20			I. * Tr. In.		
3 45	III. Sh. Eg.		19 51 10.1		III. Ec. Dis.	17 4			I. * Sh. Eg.		
5 53	III. Tr. In.		21 11 57.1		I. Ec. Dis.	17 30			I. * Tr. Eg.		
6 20 24.6	I. Ec. Dis.		21 24 12.3		III. Ec. Re.	27 12 3 48.0			I. * Ec. Dis.		
7 3	III. Tr. Eg.		22 48		III. Oc. Dis.	13 57			III. * Sh. In.		
9 23	I. * Oc. Re.		17 0 2		I. Oc. Re.	14 38			I. * Oc. Re.		
19 4 39.8	II. Ec. Dis.		0 7		III. Oc. Re.	15 46			III. * Sh. Eg.		
23 23	II. Oc. Re.		10 57 40.7		II. * Ec. Dis.	15 58			III. * Tr. In.		
7 3 39	I. Sh. In.		14 49		II. * Oc. Re.	17 8			III. * Tr. Eg.		
4 32	I. Tr. In.		18 30		I. Sh. In.	28 2 50 43.2			II. Ec. Dis.		
5 51	I. Sh. Eg.		19 10		I. Tr. In.	6 11			II. Oc. Re.		
6 43	I. Tr. Eg.		20 42		I. Sh. Eg.	9 21			I. * Sh. In.		
8 0 48 56.8	I. Ec. Dis.		21 20		I. Tr. Eg.	9 45			I. * Tr. In.		
3 50	I. Oc. Re.		18 15 40 30.8		I. * Ec. Dis.	11 33			I. * Sh. Eg.		
13 13	II. * Sh. In.		18 28		I. Oc. Re.	11 56			I. * Tr. Eg.		
14 58	II. * Tr. In.		19 5 8		II. Sh. In.	29 6 32 26.0			I. Ec. Dis.		
15 50	II. * Sh. Eg.		6 25		II. Tr. In.	9 4			I. * Oc. Re.		
17 30	II. * Tr. Eg.		7 45		II. * Sh. Eg.	21 3			II. Sh. In.		
22 7	I. Sh. In.		8 58		II. * Tr. Eg.	21 49			II. Tr. In.		
22 58	I. Tr. In.		12 58		I. * Sh. In.	23 40			II. Sh. Eg.		
9 0 20	I. Sh. Eg.		13 36		I. * Tr. In.	30 0 22			II. Tr. Eg.		
1 10	I. Tr. Eg.		15 10		I. * Sh. Eg.	3 50			I. Sh. In.		
15 50 28.3	III. * Ec. Dis.		15 46		I. * Tr. Eg.	4 11			I. Tr. In.		
17 23 33.9	III. * Ec. Re.		30 9 56		III. * Sh. In.	6 1			I. Sh. Eg.		
19 17 33.6	I. Ec. Dis.		10 9 11.8		I. * Ec. Dis.	6 22			I. Tr. Eg.		
19 24	III. Oc. Dis.		11 46		III. * Sh. Eg.	31 1 1 9.0			I. Ec. Dis.		
20 33	III. Oc. Re.		12 40		III. * Tr. In.	3 30			I. Oc. Re.		
22 17	I. Oc. Re.		12 54		I. * Oc. Re.	3 52 28.3			III. Ec. Dis.		
10 8 22 17.1	II. * Ec. Dis.		13 50		III. * Tr. Eg.	6 35			III. * Oc. Re.		
12 32	II. * Oc. Re.		31 0 15 24.4		II. Ec. Dis.	16 8 20.7			II. * Ec. Dis.		
16 36	I. * Sh. In.		3 57		II. Oc. Re.	19 18			II. Oc. Re.		
17 25	I. * Tr. In.		7 27		I. * Sh. In.	22 18			I. Sh. In.		
18 48	I. Sh. Eg.		8 2		I. * Tr. In.	22 37			I. Tr. In.		
19 36	I. Tr. Eg.										

Ec. denotes eclipse; Oc., occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

November.

d	h	m	s	I.	Sh.	Eg.	d	h	m	s	II.	* Ec.	Dis.	d	h	m	s	III.*	Oc.	Dis.
1	0	30		I.	Sh.	Eg.	11	8	1	18.5	II.	* Ec.	Dis.	21	15	3		III.*	Oc.	Dis.
	0	48		I.	Tr.	Eg.		10	37		II.	* Oc.	Re.		17	29	31.1	III.*	Ec.	Re.
	19	29	46.8	I.	Ec.	Dis.		13	10		I.	* Sh.	In.		23	23		II.	Oc.	Dis.
	21	56		I.	Oc.	Re.		13	12		I.	* Tr.	In.	22	2	25	23.7	II.	Ec.	Re.
2	10	22		II.	* Sh.	In.		15	22		I.	* Sh.	Eg.		3	48		I.	Tr.	In.
	10	56		II.	* Tr.	In.		15	24		I.	* Tr.	Eg.		4	2		I.	Sh.	In.
	12	59		II.	* Sh.	Eg.	12	10	21		I.	* Oc.	Dis.		5	59		I.	* Tr.	Eg.
	13	29		II.	* Tr.	Eg.		12	32		I.	* Oc.	Re.		6	14		I.	* Sh.	Eg.
	16	47		I.	* Sh.	In.	13	2	18		II.	Sh.	In.	23	0	57		I.	Oc.	Dis.
	17	3		I.	* Tr.	In.		2	18		II.	Tr.	In.		3	22	41.1	I.	Ec.	Re.
	18	59		I.	Sh.	Eg.		4	52		II.	Tr.	Eg.		17	42		II.	Tr.	In.
	19	14		I.	Tr.	Eg.		4	55		II.	Sh.	Eg.		18	15		II.	Sh.	In.
3	13	58	32.5	I.	* Ec.	Dis.		7	38		I.	* Tr.	In.		20	16		II.	Tr.	Eg.
	16	22		I.	* Oc.	Re.		7	39		I.	* Sh.	In.		20	52		II.	Sh.	Eg.
	17	58		III.*	Sh.	In.		9	50		I.	* Tr.	Eg.		22	14		I.	Tr.	In.
	19	13		III.	Tr.	In.		9	51		I.	* Sh.	Eg.		22	31		I.	Sh.	In.
	19	48		III.	Sh.	Eg.	14	4	47		I.	Oc.	Dis.	24	0	25		I.	Tr.	Eg.
	20	27		III.	Tr.	Eg.		6	58	46.2	I.	* Ec.	Re.		0	43		I.	Sh.	Eg.
4	5	26	0.9	II.	* Ec.	Dis.		11	49		III.*	Oc.	Dis.		19	23		I.	Oc.	Dis.
	8	24		II.	* Oc.	Re.		13	27	58.6	III.*	Ec.	Re.		21	51	34.4	I.	Ec.	Re.
	11	16		I.	* Sh.	In.		21	10		II.	Oc.	Dis.	25	4	52		III.	Tr.	In.
	11	29		I.	* Tr.	In.		23	50	5.6	II.	Ec.	Re.		6	0		III.*	Sh.	In.
	13	27		I.	* Sh.	Eg.	15	2	4		I.	Tr.	In.		6	18		III.*	Tr.	Eg.
	13	40		I.	* Tr.	Eg.		2	8		I.	Sh.	In.		7	50		III.*	Sh.	Eg.
5	8	27	12.9	I.	* Ec.	Dis.		4	15		I.	Tr.	Eg.		12	30		II.	* Oc.	Dis.
	10	48		I.	* Oc.	Re.		4	20		I.	Sh.	Eg.		15	43	3.0	II.	* Ec.	Re.
	23	41		II.	Sh.	In.		23	13		I.	Oc.	Dis.		16	40		I.	* Tr.	In.
6	0	4		II.	Tr.	In.	16	1	27	29.3	I.	Ec.	Re.		17	0		I.	* Sh.	In.
	2	18		II.	Sh.	Eg.		15	26		II.	* Tr.	In.		18	51		I.	Tr.	Eg.
	2	36		II.	Tr.	Eg.		15	37		II.	* Sh.	In.		19	12		I.	Sh.	Eg.
	5	44		I.	Sh.	In.		18	0		II.	Tr.	Eg.	26	13	49		I.	* Oc.	Dis.
	5	55		I.	Tr.	In.		18	14		II.	Sh.	Eg.		16	20	21.3	I.	* Ec.	Re.
	7	56		I.	* Sh.	Eg.		20	30		I.	Tr.	In.	27	6	50		II.	* Tr.	In.
	8	6		I.	* Tr.	Eg.		20	36		I.	Sh.	In.		7	34		II.	* Sh.	In.
7	2	55	58.2	I.	Ec.	Dis.		22	41		I.	Tr.	Eg.		9	24		II.	* Tr.	Eg.
	5	14		I.	Oc.	Re.		22	49		I.	Sh.	Eg.		10	11		II.	* Sh.	Eg.
	7	53	15.4	III.*	Ec.	Dis.	17	17	39		I.	* Oc.	Dis.		11	5		I.	* Tr.	In.
	9	52		III.*	Oc.	Re.		19	56	20.5	I.	Ec.	Re.		11	28		I.	* Sh.	In.
	18	43	39.1	III.	Ec.	Dis.	18	1	39		III.	Tr.	In.		13	17		I.	* Tr.	Eg.
	21	31		II.	Oc.	Re.		2	0		III.	Sh.	In.		13	40		I.	* Sh.	Eg.
8	0	13		I.	Sh.	In.		3	1		III.	Tr.	Eg.	28	8	15		I.	* Oc.	Dis.
	0	21		I.	Tr.	In.		3	49		III.	Sh.	Eg.		10	49	14.0	I.	* Ec.	Re.
	2	25		I.	Sh.	Eg.		10	17		II.	* Oc.	Dis.		18	18		III.	Oc.	Dis.
	2	32		I.	Tr.	Eg.		13	7	43.9	II.	* Ec.	Re.		19	47		III.	Oc.	Re.
	21	24	38.2	I.	Ec.	Dis.		14	56		I.	* Tr.	In.		19	57	57.3	III.	Ec.	Dis.
	23	40		I.	Oc.	Re.		15	5		I.	* Sh.	In.		21	31	42.9	III.	Ec.	Re.
9	13	0		II.	* Sh.	In.		17	7		I.	* Tr.	Eg.	29	1	37		II.	Oc.	Dis.
	13	11		II.	* Tr.	In.		17	17		I.	* Sh.	Eg.		5	0	44.3	II.	Ec.	Re.
	15	37		II.	* Sh.	Eg.	19	12	5		I.	* Oc.	Dis.		5	31		I.	Tr.	In.
	15	44		II.	* Tr.	Eg.		14	25	5.5	I.	* Ec.	Re.		5	57		I.	* Sh.	In.
	18	42		I.	Sh.	In.	20	4	34		II.	Tr.	In.		7	43		I.	* Tr.	Eg.
	18	46		I.	Tr.	In.		4	56		II.	Sh.	In.		8	9		I.	* Sh.	Eg.
	20	54		I.	Sh.	Eg.		7	8		II.	* Tr.	Eg.	30	2	41		I.	Oc.	Dis.
	20	58		I.	Tr.	Eg.		7	33		II.	* Sh.	Eg.		5	18	1.0	I.	Ec.	Re.
10	15	53	26.3	I.	* Ec.	Dis.		9	22		I.	* Tr.	In.		19	58		II.	Tr.	In.
	18	6		I.	Oc.	Re.		9	34		I.	* Sh.	In.		20	53		II.	Sh.	In.
	21	59		III.	Sh.	In.		11	33		I.	* Tr.	Eg.		22	33		II.	Tr.	Eg.
	22	26		III.	Tr.	In.		11	46		I.	* Sh.	Eg.		23	30		II.	Sh.	Eg.
	23	44		III.	Sh.	Eg.	21	6	31		I.	* Oc.	Dis.		23	57		I.	Tr.	In.
	23	49		III.	Tr.	Eg.		8	53	56.0	I.	* Ec.	Re.							

NOTE.—For Phases of Eclipses see pages 468 and 469.

In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; * Visible at Washington.

JUPITER'S SATELLITES, 1881. 467






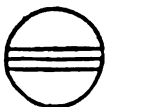






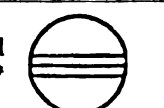
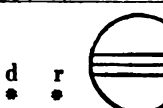
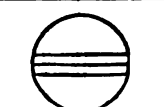
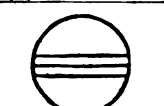
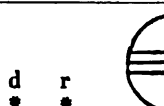

WASHINGTON MEAN TIME.

December.

d	h	m	s		d	h	m	s		d	h	m	s		d	h	m	s	
1	0	26		I. Sh. In.	11	14	35		I. * Tr. In.	22	4	48		II. Sh. In.					
2	10			I. Tr. Eg.	15	18			I. * Sh. In.	5	15			I. Tr. In.					
2	38			I. Sh. Eg.	15	27			II. * Sh. Eg.	5	35			II. * Tr. Eg.					
21	7			I. Oc. Dis.	16	47			I. Tr. Eg.	6	10			I. * Sh. In.					
23	46	56.6		I. Ec. Re.	17	30			I. Sh. Eg.	7	25			II. * Sh. Eg.					
2	8	7		III. * Tr. In.	19	11	46		I. * Oc. Dis.	7	26			I. * Tr. Eg.					
9	38			III. * Tr. Eg.	14	40	13.8		I. * Ec. Re.	8	23			I. * Sh. Eg.					
10	1			III. * Sh. In.	13	0	55		III. Oc. Dis.	22	2	27		I. Oc. Dis.					
11	51			III. * Sh. Eg.	2	34			III. Oc. Re.	5	33	47.3		I. * Ec. Re.					
14	44			II. * Oc. Dis.	4	0	47.1		III. Ec. Dis.	18	15			III. Tr. In.					
18	18	24.7		II. Ec. Re.	5	35	11.5		III. * Ec. Re.	20	1			III. Tr. Eg.					
18	23			I. Tr. In.	6	8			II. * Oc. Dis.	21	37			II. Oc. Dis.					
18	54			I. Sh. In.	9	1			I. * Tr. In.	22	6			III. Sh. In.					
20	36			I. Tr. Eg.	9	46			I. * Sh. In.	23	42			I. Tr. In.					
21	6			I. Sh. Eg.	10	11	35.5		II. * Ec. Re.	23	56			III. Sh. Eg.					
2	15	34		I. * Oc. Dis.	11	13			I. * Tr. Eg.	24	0	39		I. Sh. In.					
18	15	45.6		I. Ec. Re.	11	58			I. * Sh. Eg.	1	53			I. Tr. Eg.					
4	9	7		II. * Tr. In.	14	6	13		I. * Oc. Dis.	2	4	52.9		II. Ec. Re.					
10	12			II. * Sh. In.	9	9	4.7		I. * Ec. Re.	2	51			I. Sh. Eg.					
11	42			II. * Tr. Eg.	15	0	36		II. Tr. In.	20	54			I. Oc. Dis.					
12	49			II. * Sh. Eg.	2	10			II. Sh. In.	25	0	2	40.7	I. Ec. Re.					
12	50			I. * Tr. In.	3	12			II. Tr. Eg.	16	10			II. Tr. In.					
13	23			I. * Sh. In.	3	28			I. Tr. In.	18	8			II. Sh. In.					
15	2			I. * Tr. Eg.	4	15			I. Sh. In.	18	9			I. Tr. In.					
15	35			I. * Sh. Eg.	4	46			II. Sh. Eg.	18	47			II. Tr. Eg.					
5	10	0		I. * Oc. Dis.	5	40			I. * Tr. Eg.	19	7			I. Sh. In.					
12	44	40.1		I. * Ec. Re.	6	27			I. * Sh. Eg.	20	20			I. Tr. Eg.					
21	35			III. Oc. Dis.	16	0	39		I. Oc. Dis.	20	44			II. Sh. Eg.					
23	9			III. Oc. Re.	3	38	4.0		I. Ec. Re.	21	20			I. Sh. Eg.					
23	59	22.4		III. Ec. Dis.	14	48			III. * Tr. In.	26	15	21		I. Oc. Dis.					
6	1	33	25.8	III. Ec. Re.	16	29			III. Tr. Eg.	18	31	40.0		I. Ec. Re.					
3	52			II. Oc. Dis.	18	4			III. Sh. In.	27	7	49		III. * Oc. Dis.					
7	16			I. * Tr. In.	19	17			II. Oc. Dis.	9	37			III. * Oc. Re.					
7	36	7.9		II. * Ec. Re.	19	54			III. Sh. Eg.	10	48			II. * Oc. Dis.					
7	52			I. * Sh. In.	21	55			I. Tr. In.	12	3	32.2		III. * Ec. Dis.					
9	28			I. * Tr. Eg.	22	44			I. Sh. In.	12	36			I. * Tr. In.					
10	4			I. * Sh. Eg.	23	29	19.6		II. Ec. Re.	13	36			I. * Sh. In.					
7	4	26		I. Oc. Dis.	17	0	6		I. Tr. Eg.	13	38	48.0		III. * Ec. Re.					
7	13	29.2		I. * Ec. Re.	0	56			I. Sh. Eg.	14	47			I. Tr. Eg.					
22	16			II. Tr. In.	19	6			I. Oc. Dis.	15	22	40.7		II. Ec. Re.					
23	31			II. Sh. In.	22	6	56.2		I. Ec. Re.	15	49			I. Sh. Eg.					
8	0	51		II. Tr. Eg.	18	13	47		II. * Tr. In.	28	9	48		I. * Oc. Dis.					
1	42			I. Tr. In.	15	29			II. Sh. In.	13	0	33.7		I. * Ec. Re.					
2	8			II. Sh. Eg.	16	21			I. Tr. In.	29	5	23		II. * Tr. In.					
2	20			I. Sh. In.	16	23			II. Tr. Eg.	7	3			I. * Tr. In.					
3	54			I. Tr. Eg.	17	12			I. Sh. In.	7	29			II. * Sh. In.					
4	32			I. Sh. Eg.	18	5			II. Sh. Eg.	8	0			II. * Tr. Eg.					
22	53			I. Oc. Dis.	18	33			I. Tr. Eg.	8	5			I. * Sh. In.					
9	1	42	26.7	I. Ec. Re.	19	25			I. Sh. Eg.	9	14			I. * Tr. Eg.					
11	26			III. * Tr. In.	19	13	33		I. * Oc. Dis.	10	4			II. * Sh. Eg.					
13	2			III. * Tr. Eg.	16	35	54.2		I. Ec. Re.	10	17			I. * Sh. Eg.					
14	2			III. * Sh. In.	20	4	20		III. Oc. Dis.	30	4	16		I. Oc. Dis.					
15	53			III. * Sh. Eg.	6	3			III. * Oc. Re.	7	29	35.5		I. * Ec. Re.					
17	0			II. Oc. Dis.	8	2	5.2		III. * Ec. Dis.	21	46			III. Tr. In.					
20	8			I. Tr. In.	8	27			II. * Oc. Dis.	23	36			III. Tr. Eg.					
20	49			I. Sh. In.	9	36	53.6		III. * Ec. Re.	23	59			II. Oc. Dis.					
20	53	50.5		II. Ec. Re.	10	48			I. * Tr. In.	31	1	30		I. Tr. In.					
22	20			I. Tr. Eg.	11	41			I. * Sh. In.	2	7			III. Sh. In.					
23	1			I. Sh. Eg.	12	47	6.2		II. * Ec. Re.	2	34			I. Sh. In.					
10	17	19		I. Oc. Dis.	12	59			I. * Tr. Eg.	3	42			I. Tr. Eg.					
20	11	17.4		I. Ec. Re.	13	54			I. * Sh. Eg.	3	58			III. Sh. Eg.					
11	11	26		II. * Tr. In.	21	8	0		I. * Oc. Dis.	4	40	30.5		II. Ec. Re.					
12	50			II. * Sh. In.	11	4	46.5		I. * Ec. Re.	4	46			I. Sh. Eg.					
14	1			II. * Tr. Eg.	22	2	58		II. Tr. In.	22	43			I. Oc. Dis.					
















Ec. denotes eclipse; Oc., occultation; Tr., transit of the satellite; Sh., transit of the shadow, * Visible at Washington.

468 JUPITER'S SATELLITES, 1881.

PHASES OF THE ECLIPSES OF THE SATELLITES FOR AN INVERTING TELESCOPE.			
January.			
I.		III.	
II.		IV.	Not Eclipsed.
February.			
I.		III.	
II.		IV.	Not Eclipsed.
March.			
I.		III.	
II.		IV.	Not Eclipsed.
May.			
I.		III.	
II.		IV.	Not Eclipsed.
June.			
I.		III.	
II.		IV.	Not Eclipsed.
July.			
I.		III.	
II.		IV.	Not Eclipsed.

NOTE. — Each diagram is given for the eclipse which occurs nearest the middle of the month.

PHASES OF THE ECLIPSES OF THE SATELLITES FOR AN INVERTING TELESCOPE.

August.					
I.	d •		III.	d • r •	
II.	d •	r • 	IV.	Not Eclipsed.	
September.					
I.	d •		III.	d • r •	
II.	d •		IV.	Not Eclipsed.	
October.					
I.	d •		III.	d • r •	
II.	d •		IV.	Not Eclipsed.	
November.					
I.		r •	III.		r •
II.		r •	IV.	Not Eclipsed.	
December.					
I.		r •	III.		d • r •
II.		r •	IV.	Not Eclipsed.	

NOTE.—Each diagram is given for the eclipse which occurs nearest the middle of the month.

470 JUPITER'S SATELLITES, 1881.

WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE I.

Jan.	1	^h 9 ^m 8.4	Mar.	18	^h 12 ^m 36.5	Aug.	1	^h 21 ^m 11.5	Oct.	16	^h 22 ^m 56.4
	3	3 37.5		20	7 7.0		3	15 40.4		18	17 22.4
	4	22 6.7		22	1 37.6		5	10 9.3		20	11 48.6
	6	16 35.8	May	23	1 23.8		7	4 38.0		22	6 14.7
	8	11 5.0		24	19 54.0		8	23 6.7		24	0 40.8
	10	5 34.3		26	14 24.3		10	17 35.4		25	19 6.8
	12	0 3.7		28	8 54.5		12	12 4.0		27	13 32.9
	13	18 33.0		30	3 24.7		14	6 32.6		29	7 58.8
	15	13 2.5		31	21 54.9		16	1 1.0		31	2 24.8
	17	7 31.9	June	2	16 25.0		17	19 29.4	Nov.	1	20 50.8
	19	2 1.5		4	10 55.2		19	13 57.7		3	15 16.7
	20	20 31.1		6	5 25.3		21	8 26.0		5	9 42.6
	22	15 0.8		7	23 55.3		23	2 54.1		7	4 8.6
	24	9 30.5		9	18 25.4		24	21 22.3		8	22 34.4
	26	4 0.3		11	12 55.6		26	15 50.5		10	17 0.3
	27	22 30.1		13	7 25.5		28	10 18.5		12	11 26.3
	29	17 0.0		15	1 55.5		30	4 46.5		14	5 52.3
Feb.	31	11 29.8		16	20 25.4		31	23 14.3		16	0 18.2
	2	5 59.7		18	14 55.3	Sept.	2	17 42.2		17	18 44.2
	4	0 29.6		20	9 25.1		4	12 10.0		19	13 10.2
	5	18 59.6		22	3 55.0		6	6 37.7		21	7 36.2
	7	13 29.6		23	22 24.9		8	1 15.4		23	2 2.1
	9	7 59.7		25	16 54.6		9	19 33.0		24	20 29.3
	11	2 29.7		27	11 24.4		11	14 0.5		26	14 54.4
	12	20 59.8		29	5 54.1		13	8 27.9		28	9 20.6
	14	15 30.0	July	1	0 23.9		15	2 55.4		30	3 46.7
	16	10 0.2		2	18 53.6		16	21 22.7	Dec.	1	22 13.1
	18	4 30.4		4	13 23.2		18	15 49.9		3	16 39.3
	19	23 0.7		6	7 32.7		20	10 17.0		5	11 5.7
	21	17 31.0		8	2 22.3		22	4 44.0		7	5 32.0
	23	12 1.3		9	20 51.9		23	23 10.9		8	23 58.6
	25	6 31.6		11	15 21.3		25	17 37.9		10	18 25.0
	27	1 1.9		13	9 50.7		27	12 4.7		12	12 51.6
	28	19 31.8		15	4 20.2		29	6 31.5		14	7 18.3
Mar.	2	14 2.6		16	22 49.5	Oct.	1	0 58.2		16	1 45.2
	4	8 33.0		18	17 18.8		2	19 24.9		17	20 11.9
	6	3 3.4		20	11 48.1		4	13 51.5		19	14 38.8
	7	21 33.8		22	6 17.3		6	8 18.1		21	9 5.6
	9	16 4.3		24	0 46.5		8	2 44.6		23	3 32.8
	11	10 34.6		25	19 15.6		9	21 11.2		24	21 59.8
	13	5 5.1		27	13 44.6		11	15 37.5		26	16 27.0
	14	23 35.6		29	8 13.6		13	10 3.8		28	10 54.2
	16	18 6.1		31	2 42.6		15	4 30.1		30	5 21.6

SATELLITE II.

Jan.	2	^h 11 ^m 29.5	Jan.	23	^h 19 ^m 30.2	Feb.	14	^h 3 ^m 46.6	Mar.	7	^h 12 ^m 14.4
	6	0 48.3		27	8 51.9		17	17 10.2		11	1 39.6
	9	14 7.7		30	22 14.2		21	6 34.8		14	15 5.7
	13	3 27.6	Feb.	3	11 36.6		24	19 59.1		18	4 31.1
	16	16 48.1		7	0 59.7		28	9 24.1		21	17 57.5
	20	6 8.8		10	14 22.8	Mar.	3	22 48.8	May	24	18 53.8

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WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE II.

May	28	^h 9 ^m 19.1	July	24	^h 7 ^m 41.4	Sept.	19	^h 4 ^m 12.9	Nov.	11	^h 9 ^m 20.7
	31	22 45.5		27	21 2.9		22	17 25.1		14	22 27.1
June	4	12 10.5		31	10 22.9		26	6 36.2		18	11 33.7
	8	1 36.4		Aug. 3	23 43.3		29	19 47.0		22	0 40.3
	11	15 1.2		7	13 2.5	Oct.	3	8 57.1		25	13 47.1
	15	4 26.7		11	2 21.9		6	22 6.8		29	2 54.2
	18	17 50.8		14	15 40.0		10	11 15.8	Dec.	2	16 1.6
	22	7 15.8		18	4 58.2		14	0 24.5		6	5 9.3
	25	20 39.4		21	18 15.1		17	13 32.5		9	18 17.5
	29	10 3.9		25	7 32.2		21	2 40.2		13	7 26.1
July	2	23 27.2		28	20 48.2		24	15 47.6		16	20 34.7
	6	12 51.0		Sept. 1	10 4.1		28	4 54.8		20	9 44.9
	10	2 13.5		4	23 18.9		31	18 1.5		23	22 55.1
	13	15 36.7		8	12 33.6	Nov.	4	7 7.9		27	12 5.9
	17	4 58.2		12	1 47.1		7	20 14.3		31	1 17.3
	20	18 20.4		15	15 0.6						

SATELLITE III.

Jan.	2	^h 22 ^m 28.7	Mar.	22	^h 22 ^m 14.0	Aug.	6	^h 10 ^m 5.7	Oct.	24	^h 2 ^m 41.6
	10	2 34.3		26	14 53.5		13	14 9.2		31	5 58.5
	17	6 44.4	May	2	19 21.5		20	18 9.6	Nov.	7	9 14.0
	24	10 57.8		9	23 47.7		27	22 4.8		14	12 29.1
	31	15 15.0		17	4 13.2	Sept.	4	1 55.6		21	15 45.0
Feb.	7	19 34.7		24	8 36.6		11	5 41.3		28	19 2.2
	14	23 56.8	July	1	12 58.6		18	9 22.4	Dec.	5	22 21.9
	22	4 20.8		8	17 17.8		25	12 59.0		13	1 44.6
Mar.	1	8 46.4		15	21 34.4	Oct.	2	16 30.8		20	5 11.6
	8	13 14.3		23	1 47.9		9	19 58.7		27	8 43.2
	15	17 43.4		30	5 58.2		16	23 22.8			

In the following Tables x and y are the rectangular coördinates for each Satellite, referred to the centre of the primary and the major and minor axes of the apparent ellipse described by the Satellite. x is positive on the *east* side of the planet; negative on the *west* side. y is positive when *north*; negative when *south*.

x' and y' are the coördinates which correspond to a constant value of the major axis and maximum value of the minor axis, as seen from the sun at its mean distance.

The factors by which x' and y' must be multiplied to obtain the coördinates x and y at any time, are given for each Satellite on pages 476 and 477.

p is the inclination of the minor axis of the apparent ellipse to the circle of declination; reckoned from the *north*, + towards the *east*.

COORDINATES IN THE MEAN APPARENT ELLIPSE DESCRIBED BY THE
SATELLITE, AND FOR THE MEAN DISTANCE OF JUPITER
FROM THE SUN, FOR THE TIME t AFTER GEO-
CENTRIC SUPERIOR CONJUNCTION.

SATELLITE I.

t	x'	y'	t	x'	y'	t	x'	y'
$\begin{smallmatrix} d & h & m \\ 0 & 0 & 0 \end{smallmatrix}$	$+ 0.0$	$+ 6.6$	$\begin{smallmatrix} d & h & m \\ 0 & 15 & 0 \end{smallmatrix}$	$+ 87.1$	$- 4.0$	$\begin{smallmatrix} d & h & m \\ 1 & 6 & 0 \end{smallmatrix}$	-105.1	$- 1.8$
$\begin{smallmatrix} 0 & 0 & 20 \\ 0 & 0 & 40 \\ 0 & 1 & 0 \\ 0 & 1 & 20 \\ 0 & 1 & 40 \end{smallmatrix}$	$\begin{smallmatrix} 5.4 \\ 10.8 \\ 16.1 \\ 21.4 \\ 26.6 \end{smallmatrix}$	$\begin{smallmatrix} 6.6 \\ 6.6 \\ 6.6 \\ 6.5 \\ 6.4 \end{smallmatrix}$	$\begin{smallmatrix} 0 & 15 & 20 \\ 0 & 15 & 40 \\ 0 & 16 & 0 \\ 0 & 16 & 20 \\ 0 & 16 & 40 \end{smallmatrix}$	$\begin{smallmatrix} 83.7 \\ 80.1 \\ 76.4 \\ 72.5 \\ 68.4 \end{smallmatrix}$	$\begin{smallmatrix} 4.3 \\ 4.5 \\ 4.7 \\ 5.0 \\ 5.2 \end{smallmatrix}$	$\begin{smallmatrix} 1 & 6 & 20 \\ 1 & 6 & 40 \\ 1 & 7 & 0 \\ 1 & 7 & 20 \\ 1 & 7 & 40 \end{smallmatrix}$	$\begin{smallmatrix} 106.4 \\ 107.5 \\ 108.3 \\ 108.3 \\ 109.1 \end{smallmatrix}$	$\begin{smallmatrix} 1.5 \\ 1.2 \\ 0.8 \\ 0.5 \\ - 0.2 \end{smallmatrix}$
$\begin{smallmatrix} 0 & 2 & 0 \\ 0 & 2 & 20 \\ 0 & 2 & 40 \\ 0 & 3 & 0 \\ 0 & 3 & 20 \\ 0 & 3 & 40 \end{smallmatrix}$	$\begin{smallmatrix} + 31.8 \\ 36.9 \\ 42.0 \\ 46.9 \\ 51.7 \\ 56.4 \end{smallmatrix}$	$\begin{smallmatrix} + 6.3 \\ 6.2 \\ 6.1 \\ 6.0 \\ 5.8 \\ 5.7 \end{smallmatrix}$	$\begin{smallmatrix} 0 & 17 & 0 \\ 0 & 17 & 20 \\ 0 & 17 & 40 \\ 0 & 18 & 0 \\ 0 & 18 & 20 \\ 0 & 18 & 40 \end{smallmatrix}$	$\begin{smallmatrix} + 64.1 \\ 59.6 \\ 55.0 \\ 50.3 \\ 45.5 \\ 40.5 \end{smallmatrix}$	$\begin{smallmatrix} - 5.4 \\ 5.5 \\ 5.7 \\ 5.9 \\ 6.0 \\ 6.1 \end{smallmatrix}$	$\begin{smallmatrix} 1 & 8 & 0 \\ 1 & 8 & 20 \\ 1 & 8 & 40 \\ 1 & 9 & 0 \\ 1 & 9 & 20 \\ 1 & 9 & 40 \end{smallmatrix}$	$\begin{smallmatrix} -109.1 \\ 108.9 \\ 108.4 \\ 107.6 \\ 106.6 \\ 105.3 \end{smallmatrix}$	$\begin{smallmatrix} + 0.1 \\ 0.5 \\ 0.8 \\ 1.1 \\ 1.4 \\ 1.8 \end{smallmatrix}$
$\begin{smallmatrix} 0 & 4 & 0 \\ 0 & 4 & 20 \\ 0 & 4 & 40 \\ 0 & 5 & 0 \\ 0 & 5 & 20 \\ 0 & 5 & 40 \end{smallmatrix}$	$\begin{smallmatrix} + 60.9 \\ 65.3 \\ 69.5 \\ 73.6 \\ 77.5 \\ 81.2 \end{smallmatrix}$	$\begin{smallmatrix} + 5.5 \\ 5.3 \\ 5.1 \\ 4.9 \\ 4.7 \\ 4.4 \end{smallmatrix}$	$\begin{smallmatrix} 0 & 19 & 0 \\ 0 & 19 & 20 \\ 0 & 19 & 40 \\ 0 & 20 & 0 \\ 0 & 20 & 20 \\ 0 & 20 & 40 \end{smallmatrix}$	$\begin{smallmatrix} + 35.5 \\ 30.4 \\ 25.2 \\ 19.9 \\ 14.6 \\ 9.2 \end{smallmatrix}$	$\begin{smallmatrix} - 6.3 \\ 6.4 \\ 6.4 \\ 6.5 \\ 6.6 \\ 6.6 \end{smallmatrix}$	$\begin{smallmatrix} 1 & 10 & 0 \\ 1 & 10 & 20 \\ 1 & 10 & 40 \\ 1 & 11 & 0 \\ 1 & 11 & 20 \\ 1 & 11 & 40 \end{smallmatrix}$	$\begin{smallmatrix} -103.8 \\ 102.0 \\ 99.9 \\ 97.6 \\ 95.1 \\ 92.3 \end{smallmatrix}$	$\begin{smallmatrix} + 2.1 \\ 2.4 \\ 2.7 \\ 3.0 \\ 3.3 \\ 3.5 \end{smallmatrix}$
$\begin{smallmatrix} 0 & 6 & 0 \\ 0 & 6 & 20 \\ 0 & 6 & 40 \\ 0 & 7 & 0 \\ 0 & 7 & 20 \\ 0 & 7 & 40 \end{smallmatrix}$	$\begin{smallmatrix} + 84.7 \\ 88.0 \\ 91.1 \\ 94.0 \\ 96.6 \\ 99.0 \end{smallmatrix}$	$\begin{smallmatrix} + 4.2 \\ 3.9 \\ 3.7 \\ 3.4 \\ 3.1 \\ 2.8 \end{smallmatrix}$	$\begin{smallmatrix} 0 & 21 & 0 \\ 0 & 21 & 20 \\ 0 & 21 & 40 \\ 0 & 22 & 0 \\ 0 & 22 & 20 \\ 0 & 22 & 40 \end{smallmatrix}$	$\begin{smallmatrix} + 3.8 \\ - 1.5 \\ 6.9 \\ 12.3 \\ 17.6 \\ 22.9 \end{smallmatrix}$	$\begin{smallmatrix} - 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.5 \\ 6.5 \end{smallmatrix}$	$\begin{smallmatrix} 1 & 12 & 0 \\ 1 & 12 & 20 \\ 1 & 12 & 40 \\ 1 & 13 & 0 \\ 1 & 13 & 20 \\ 1 & 13 & 40 \end{smallmatrix}$	$\begin{smallmatrix} - 89.3 \\ 86.1 \\ 82.7 \\ 79.1 \\ 75.3 \\ 71.3 \end{smallmatrix}$	$\begin{smallmatrix} + 3.8 \\ 4.1 \\ 4.3 \\ 4.6 \\ 4.8 \\ 5.0 \end{smallmatrix}$
$\begin{smallmatrix} 0 & 8 & 0 \\ 0 & 8 & 20 \\ 0 & 8 & 40 \\ 0 & 9 & 0 \\ 0 & 9 & 20 \\ 0 & 9 & 40 \end{smallmatrix}$	$\begin{smallmatrix} +101.1 \\ 103.0 \\ 104.7 \\ 106.1 \\ 107.3 \\ 108.1 \end{smallmatrix}$	$\begin{smallmatrix} + 2.5 \\ 2.2 \\ 1.9 \\ 1.6 \\ 1.3 \\ 0.9 \end{smallmatrix}$	$\begin{smallmatrix} 0 & 23 & 0 \\ 0 & 23 & 20 \\ 0 & 23 & 40 \\ 1 & 0 & 0 \\ 1 & 0 & 20 \\ 1 & 0 & 40 \end{smallmatrix}$	$\begin{smallmatrix} - 28.1 \\ 33.3 \\ 38.4 \\ 43.4 \\ 48.3 \\ 53.1 \end{smallmatrix}$	$\begin{smallmatrix} - 6.4 \\ 6.3 \\ 6.2 \\ 6.1 \\ 5.9 \\ 5.8 \end{smallmatrix}$	$\begin{smallmatrix} 1 & 14 & 0 \\ 1 & 14 & 20 \\ 1 & 14 & 40 \\ 1 & 15 & 0 \\ 1 & 15 & 20 \\ 1 & 15 & 40 \end{smallmatrix}$	$\begin{smallmatrix} - 67.1 \\ 62.8 \\ 58.3 \\ 53.7 \\ 49.0 \\ 44.1 \end{smallmatrix}$	$\begin{smallmatrix} + 5.2 \\ 5.4 \\ 5.6 \\ 5.8 \\ 5.9 \\ 6.1 \end{smallmatrix}$
$\begin{smallmatrix} 0 & 10 & 0 \\ 0 & 10 & 20 \\ 0 & 10 & 40 \\ 0 & 11 & 0 \\ 0 & 11 & 20 \\ 0 & 11 & 40 \end{smallmatrix}$	$\begin{smallmatrix} +108.7 \\ 109.1 \\ 109.1 \\ 109.0 \\ 108.6 \\ 107.9 \end{smallmatrix}$	$\begin{smallmatrix} + 0.6 \\ + 0.3 \\ - 0.1 \\ 0.4 \\ 0.7 \\ 1.0 \end{smallmatrix}$	$\begin{smallmatrix} 1 & 1 & 0 \\ 1 & 1 & 20 \\ 1 & 1 & 40 \\ 1 & 2 & 0 \\ 1 & 2 & 20 \\ 1 & 2 & 40 \end{smallmatrix}$	$\begin{smallmatrix} - 57.7 \\ 62.2 \\ 66.6 \\ 70.8 \\ 74.8 \\ 78.6 \end{smallmatrix}$	$\begin{smallmatrix} - 5.6 \\ 5.4 \\ 5.2 \\ 5.0 \\ 4.8 \\ 4.6 \end{smallmatrix}$	$\begin{smallmatrix} 1 & 16 & 0 \\ 1 & 16 & 20 \\ 1 & 16 & 40 \\ 1 & 17 & 0 \\ 1 & 17 & 20 \\ 1 & 17 & 40 \end{smallmatrix}$	$\begin{smallmatrix} - 39.1 \\ 34.0 \\ 28.9 \\ 23.7 \\ 18.4 \\ 13.0 \end{smallmatrix}$	$\begin{smallmatrix} + 6.2 \\ 6.3 \\ 6.4 \\ 6.5 \\ 6.5 \\ 6.6 \end{smallmatrix}$
$\begin{smallmatrix} 0 & 12 & 0 \\ 0 & 12 & 20 \\ 0 & 12 & 40 \\ 0 & 13 & 0 \\ 0 & 13 & 20 \\ 0 & 13 & 40 \end{smallmatrix}$	$\begin{smallmatrix} +106.9 \\ 105.7 \\ 104.2 \\ 102.5 \\ 100.5 \\ 98.3 \end{smallmatrix}$	$\begin{smallmatrix} - 1.3 \\ 1.7 \\ 2.0 \\ 2.3 \\ 2.6 \\ 2.9 \end{smallmatrix}$	$\begin{smallmatrix} 1 & 3 & 0 \\ 1 & 3 & 20 \\ 1 & 3 & 40 \\ 1 & 4 & 0 \\ 1 & 4 & 20 \\ 1 & 4 & 40 \end{smallmatrix}$	$\begin{smallmatrix} - 82.2 \\ 85.6 \\ 88.9 \\ 91.9 \\ 94.7 \\ 97.3 \end{smallmatrix}$	$\begin{smallmatrix} - 4.4 \\ 4.1 \\ 3.8 \\ 3.6 \\ 3.3 \\ 3.0 \end{smallmatrix}$	$\begin{smallmatrix} 1 & 18 & 0 \\ 1 & 18 & 20 \\ 1 & 18 & 40 \\ 1 & 19 & 0 \\ 1 & 19 & 20 \\ 1 & 19 & 40 \end{smallmatrix}$	$\begin{smallmatrix} - 7.7 \\ - 2.3 \\ + 3.1 \\ 8.5 \\ 13.8 \\ 19.1 \end{smallmatrix}$	$\begin{smallmatrix} + 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.5 \end{smallmatrix}$
$\begin{smallmatrix} 0 & 14 & 0 \\ 0 & 14 & 20 \\ 0 & 14 & 40 \end{smallmatrix}$	$\begin{smallmatrix} + 95.8 \\ 93.1 \\ + 90.2 \end{smallmatrix}$	$\begin{smallmatrix} - 3.2 \\ 3.5 \\ - 3.7 \end{smallmatrix}$	$\begin{smallmatrix} 1 & 5 & 0 \\ 1 & 5 & 20 \\ 1 & 5 & 40 \end{smallmatrix}$	$\begin{smallmatrix} - 99.6 \\ 101.7 \\ -103.5 \end{smallmatrix}$	$\begin{smallmatrix} - 2.7 \\ 2.4 \\ - 2.1 \end{smallmatrix}$	$\begin{smallmatrix} 1 & 20 & 0 \end{smallmatrix}$	$\begin{smallmatrix} + 24.4 \end{smallmatrix}$	$\begin{smallmatrix} + 6.5 \end{smallmatrix}$

COORDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE II.

<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>
d h m			d h m			d h m		
0 0 0	+ 0.0	+12.2	1 6 0	+139.5	- 7.3	2 12 0	-166.4	- 3.5
0 0 40	8.5	12.2	1 6 40	134.2	7.7	2 12 40	168.6	2.9
0 1 20	17.0	12.1	1 7 20	128.6	8.2	2 13 20	170.4	2.3
0 2 0	25.5	12.1	1 8 0	122.7	8.6	2 14 0	171.9	1.8
0 2 40	33.9	12.0	1 8 40	116.5	9.0	2 14 40	173.0	1.2
0 3 20	42.2	11.8	1 9 20	110.1	9.4	2 15 20	173.6	- 0.6
0 4 0	+ 50.5	+11.7	1 10 0	+103.4	- 9.8	2 16 0	-173.8	0.0
0 4 40	58.6	11.5	1 10 40	96.4	10.1	2 16 40	173.6	+ 0.6
0 5 20	66.5	11.3	1 11 20	80.2	10.5	2 17 20	172.9	1.2
0 6 0	74.3	11.0	1 12 0	81.7	10.8	2 18 0	171.8	1.8
0 6 40	81.9	10.8	1 12 40	74.1	11.0	2 18 40	170.3	2.4
0 7 20	89.4	10.5	1 13 20	66.3	11.3	2 19 20	168.4	3.0
0 8 0	+ 96.6	+10.1	1 14 0	+ 58.3	-11.5	2 20 0	-166.2	+ 3.5
0 8 40	103.6	9.8	1 14 40	50.2	11.7	2 20 40	163.5	4.1
0 9 20	110.3	9.4	1 15 20	42.0	11.8	2 21 20	160.4	4.7
0 10 0	116.7	9.0	1 16 0	33.7	12.0	2 22 0	156.9	5.2
0 10 40	122.9	8.6	1 16 40	25.3	12.1	2 22 40	153.0	5.8
0 11 20	128.8	8.2	1 17 20	16.8	12.1	2 23 20	148.8	6.3
0 12 0	+134.4	+ 7.7	1 18 0	+ 8.3	-12.2	3 0 0	-144.2	+ 6.8
0 12 40	139.6	7.3	1 18 40	- 0.2	12.2	3 0 40	139.3	7.3
0 13 20	144.5	6.8	1 19 20	8.8	12.2	3 1 20	134.1	7.8
0 14 0	149.0	6.3	1 20 0	17.3	12.1	3 2 0	128.5	8.2
0 14 40	153.2	5.7	1 20 40	25.7	12.1	3 2 40	122.6	8.6
0 15 20	157.0	5.2	1 21 20	34.1	12.0	3 3 20	116.4	9.0
0 16 0	+160.5	+ 4.7	1 22 0	- 42.4	-11.8	3 4 0	-109.9	+ 9.4
0 16 40	163.6	4.1	1 22 40	50.6	11.7	3 4 40	103.1	9.8
0 17 20	166.3	3.5	1 23 20	58.7	11.5	3 5 20	96.1	10.1
0 18 0	168.6	3.0	2 0 0	66.7	11.3	3 6 0	88.9	10.5
0 18 40	170.5	2.4	2 0 40	74.5	11.0	3 6 40	81.5	10.8
0 19 20	171.9	1.8	2 1 20	82.1	10.7	3 7 20	73.9	11.0
0 20 0	+172.9	+ 1.2	2 2 0	- 89.5	-10.4	3 8 0	- 66.1	+11.3
0 20 40	173.6	+ 0.6	2 2 40	96.7	10.1	3 8 40	58.1	11.5
0 21 20	173.8	0.0	2 3 20	103.7	9.8	3 9 20	50.0	11.7
0 22 0	173.6	- 0.6	2 4 0	110.4	9.4	3 10 0	41.8	11.8
0 22 40	172.9	1.2	2 4 40	116.8	9.0	3 10 40	33.5	12.0
0 23 20	171.8	1.8	2 5 20	123.0	8.6	3 11 20	25.1	12.1
1 0 0	+170.4	- 2.4	2 6 0	-128.9	- 8.2	3 12 0	- 16.6	+12.1
1 0 40	168.5	3.0	2 6 40	134.5	7.7	3 12 40	- 8.1	12.2
1 1 20	166.2	3.5	2 7 20	139.7	7.2	3 13 20	+ 0.4	12.2
1 2 0	163.5	4.1	2 8 0	144.6	6.7	3 14 0	9.0	12.2
1 2 40	160.4	4.7	2 8 40	149.1	6.2	3 14 40	17.5	12.1
1 3 20	157.0	5.2	2 9 20	153.3	5.7	3 15 20	26.0	12.1
1 4 0	+153.2	- 5.8	2 10 0	-157.1	- 5.2	3 16 0	+ 34.4	+12.0
1 4 40	149.0	6.3	2 10 40	160.6	4.6			
1 5 20	+144.4	- 6.8	2 11 20	-163.7	- 4.1			

COORDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE III.

<i>t</i>	<i>z'</i>	<i>y'</i>	<i>t</i>	<i>z'</i>	<i>y'</i>	<i>t</i>	<i>z'</i>	<i>y'</i>
d h m			d h m			d h m		
0 0 0	+ 0.0	+17.4	2 12 0	+225.4	-10.1	5 0 0	-262.3	- 5.6
0 1 20	13.5	17.4	2 13 20	217.3	10.8	5 1 20	266.4	4.8
0 2 40	26.9	17.3	2 14 40	208.6	11.5	5 2 40	269.8	4.0
0 4 0	40.3	17.2	2 16 0	199.5	12.1	5 4 0	272.6	3.2
0 5 20	53.6	17.1	2 17 20	189.9	12.7	5 5 20	274.7	2.3
0 6 40	66.8	16.9	2 18 40	179.9	13.3	5 6 40	276.2	1.5
0 8 0	+ 79.8	+16.7	2 20 0	+169.4	-13.8	5 8 0	-277.0	- 0.6
0 9 20	92.7	16.4	2 21 20	158.5	14.3	5 9 20	277.2	+ 0.2
0 10 40	105.3	16.1	2 22 40	147.2	14.8	5 10 40	276.7	1.1
0 12 0	117.6	15.8	3 0 0	135.6	15.2	5 12 0	275.5	1.9
0 13 20	129.7	15.4	3 1 20	123.7	15.6	5 13 20	273.7	2.7
0 14 40	141.5	15.0	3 2 40	111.5	16.0	5 14 40	271.2	3.6
0 16 0	+153.0	+14.5	3 4 0	+ 99.0	-16.3	5 16 0	-268.1	+ 4.4
0 17 20	164.1	14.0	3 5 20	86.3	16.6	5 17 20	264.4	5.2
0 18 40	174.7	13.5	3 6 40	73.3	16.8	5 18 40	260.1	6.0
0 20 0	184.9	13.0	3 8 0	60.2	17.0	5 20 0	255.1	6.8
0 21 20	194.7	12.4	3 9 20	47.0	17.2	5 21 20	249.5	7.6
0 22 40	204.1	11.8	3 10 40	33.6	17.3	5 22 40	243.3	8.3
1 0 0	+213.0	+11.1	3 12 0	+ 20.2	-17.4	6 0 0	-236.6	+ 9.1
1 1 20	221.4	10.5	3 13 20	+ 6.7	17.4	6 1 20	229.3	9.8
1 2 40	229.3	9.8	3 14 40	- 6.8	17.4	6 2 40	221.4	10.5
1 4 0	236.6	9.1	3 16 0	20.3	17.4	6 4 0	213.0	11.1
1 5 20	243.3	8.3	3 17 20	33.7	17.3	6 5 20	204.1	11.8
1 6 40	249.5	7.6	3 18 40	47.1	17.2	6 6 40	194.7	12.4
1 8 0	+255.1	+ 6.8	3 20 0	- 60.3	-17.0	6 8 0	-184.9	+13.0
1 9 20	260.0	6.0	3 21 20	73.4	16.8	6 9 20	174.7	13.5
1 10 40	264.3	5.2	3 22 40	86.3	16.6	6 10 40	164.1	14.0
1 12 0	268.0	4.4	4 0 0	99.0	16.3	6 12 0	153.0	14.5
1 13 20	271.1	3.6	4 1 20	111.5	16.0	6 13 20	141.5	15.0
1 14 40	273.6	2.7	4 2 40	123.7	15.6	6 14 40	129.7	15.4
1 16 0	+275.5	+ 1.9	4 4 0	-135.7	-15.2	6 16 0	-117.6	+15.8
1 17 20	276.7	1.1	4 5 20	147.2	14.8	6 17 20	105.2	16.1
1 18 40	277.2	+ 0.2	4 6 40	158.4	14.3	6 18 40	92.6	16.4
1 20 0	277.0	- 0.6	4 8 0	169.3	13.8	6 20 0	79.8	16.7
1 21 20	276.2	1.5	4 9 20	179.8	13.3	6 21 20	66.8	16.9
1 22 40	274.7	2.3	4 10 40	189.9	12.7	6 22 40	53.6	17.1
2 0 0	+272.6	- 3.2	4 12 0	-199.5	-12.1	7 0 0	- 40.3	+17.2
2 1 20	269.8	4.0	4 13 20	208.6	11.5	7 1 20	26.9	17.3
2 2 40	266.4	4.8	4 14 40	217.3	10.8	7 2 40	- 13.4	17.4
2 4 0	262.3	5.6	4 16 0	225.5	10.1	7 4 0	+ 0.1	17.4
2 5 20	257.6	6.4	4 17 20	233.1	9.4	7 5 20	13.6	17.4
2 6 40	252.3	7.2	4 18 40	240.1	8.7	7 6 40	27.0	17.3
2 8 0	+246.4	- 8.0	4 20 0	-246.5	- 8.0	7 8 0	+ 40.4	+17.2
2 9 20	240.0	8.7	4 21 20	252.3	7.2			
2 10 40	+233.0	- 9.4	4 22 40	-257.6	- 6.4			

COORDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE IV.

<i>t</i>	<i>z'</i>	<i>y'</i>	<i>t</i>	<i>z'</i>	<i>y'</i>	<i>t</i>	<i>z'</i>	<i>y'</i>
d h			d h			d h		
0 0	+ 0.0	+34.8	5 18	+406.2	-19.3	11 12	-449.0	-13.5
0 3	22.8	34.8	5 21	393.1	20.6	11 15	457.4	12.0
0 6	45.6	34.7	6 0	379.2	21.9	11 18	464.8	10.5
0 9	68.3	34.5	6 3	364.4	23.1	11 21	471.2	8.9
0 12	90.9	34.2	6 6	348.8	24.3	12 0	476.5	7.3
0 15	113.2	33.9	6 9	332.5	25.5	12 3	480.8	5.7
0 18	+135.3	+33.5	6 12	+315.4	-26.6	12 6	-484.0	- 4.1
0 21	157.1	33.0	6 15	297.6	27.6	12 9	486.2	2.5
1 0	178.5	32.4	6 18	279.2	28.5	12 12	487.3	- 0.8
1 3	199.6	31.8	6 21	260.2	29.4	12 15	487.3	+ 0.8
1 6	220.3	31.1	7 0	240.6	30.3	12 18	486.3	2.4
1 9	240.4	30.3	7 3	220.5	31.1	12 21	484.2	4.0
1 12	+260.0	+29.5	7 6	+199.9	-31.8	13 0	-480.9	+ 5.7
1 15	279.0	28.6	7 9	178.8	32.4	13 3	476.6	7.3
1 18	297.4	27.6	7 12	157.4	33.0	13 6	471.3	8.9
1 21	315.2	26.6	7 15	135.6	33.5	13 9	465.0	10.5
2 0	332.3	25.5	7 18	113.5	33.9	13 12	457.6	12.0
2 3	348.6	24.3	7 21	91.2	34.2	13 15	449.3	13.5
2 6	+364.1	+23.1	8 0	+ 68.7	-34.5	13 18	-440.0	+15.0
2 9	378.9	21.9	8 3	46.0	34.7	13 21	429.7	16.4
2 12	392.9	20.6	8 6	23.2	34.8	14 0	418.5	17.8
2 15	406.0	19.3	8 9	+ 0.3	34.8	14 3	406.3	19.2
2 18	418.2	17.9	8 12	- 22.5	34.8	14 6	393.3	20.6
2 21	429.5	16.5	8 15	45.3	34.7	14 9	379.3	21.9
3 0	+439.8	+15.0	8 18	- 68.0	-34.5	14 12	-364.6	+23.1
3 3	449.1	13.5	8 21	90.5	34.2	14 15	349.1	24.3
3 6	457.5	12.0	9 0	112.9	33.9	14 18	332.8	25.4
3 9	464.9	10.5	9 3	135.0	33.5	14 21	315.7	26.5
3 12	471.3	8.9	9 6	156.8	33.0	15 0	298.0	27.5
3 15	476.6	7.3	9 9	178.2	32.4	15 3	279.6	28.5
3 18	+480.8	+ 5.7	9 12	-199.3	-31.8	15 6	-260.5	+29.4
3 21	484.0	4.1	9 15	220.0	31.1	15 9	240.9	30.3
4 0	486.2	2.5	9 18	240.1	30.3	15 12	220.8	31.1
4 3	487.3	+ 0.8	9 21	259.7	29.5	15 15	200.2	31.8
4 6	487.3	- 0.8	10 0	278.7	28.6	15 18	179.2	32.4
4 9	486.3	2.4	10 3	297.2	27.6	15 21	157.7	33.0
4 12	+484.2	- 4.1	10 6	-315.0	-26.6	16 0	-135.9	+33.5
4 15	480.9	5.7	10 9	332.1	25.5	16 3	113.8	33.9
4 18	476.6	7.3	10 12	348.4	24.4	16 6	91.5	34.2
4 21	471.3	8.9	10 15	363.9	23.2	16 9	69.0	34.5
5 0	465.0	10.4	10 18	378.7	21.9	16 12	46.3	34.7
5 3	457.7	12.0	10 21	392.7	20.6	16 15	23.5	34.8
5 6	+449.3	-13.5	11 0	-405.8	-19.3	16 18	- 0.6	+34.8
5 9	439.9	15.0	11 3	418.0	17.9	16 21	+ 22.2	34.8
5 12	429.6	16.4	11 6	429.3	16.5	17 0	+ 45.0	+34.7
5 15	+418.4	-17.9	11 9	-439.6	-15.0			

476 JUPITER'S SATELLITES, 1881.

SATELLITE I.

Date.		AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.		Date.		AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.	
1881.		Factor for x' .	Factor for y' .	P .	z .	y .	1881.		Factor for x' .	Factor for y' .	P .	z .	y .
Jan.	1	1.069	+0.740	-24 18.0	+41"	+5"	Aug.	1	1.019	+0.805	-14 37.9	-39"	+5"
	8	1.045	0.718	24 14.0	40	5		8	1.040	0.827	14 19.8	40	5
	15	1.022	0.699	24 8.6	39	4		16	1.063	0.851	14 4.4	41	5
	22	1.001	0.683	24 2.2	37	4		23	1.087	0.876	13 51.8	41	5
	29	0.981	0.668	23 54.6	35	4		30	1.111	0.901	13 42.5	42	5
Feb.	5	0.963	+0.655	-23 45.7	+34	+4	Sept.	6	1.136	+0.927	-13 36.7	-42	+6
	12	0.947	0.645	23 35.6	32	4		13	1.162	0.953	13 34.6	42	6
	19	0.932	0.637	23 24.1	30	4		20	1.187	0.978	13 35.9	41	6
	27	0.919	0.630	23 11.0	28	4		27	1.212	1.003	13 40.7	40	6
Mar.	6	0.908	0.625	22 56.6	27	4	Oct.	4	1.235	1.026	13 49.3	39	6
	13	0.898	+0.621	-22 40.8	+25	+4		11	1.254	+1.045	-14 1.5	-37	+6
	20	0.890	0.619	22 23.6	+23	4		18	1.271	1.061	14 16.5	35	6
May	23	0.884	0.635	18 53.5	-23	4		25	1.284	1.072	14 33.5	32	7
	30	0.891	0.665	18 26.1	25	4	Nov.	1	1.293	1.077	14 52.3	28	7
June	6	0.899	+0.675	-17 58.4	-26	+4		8	1.297	+1.076	-15 12.2	-23	+7
	13	0.909	0.686	17 30.6	28	4		16	1.296	0.070	15 32.2	+23	7
	20	0.920	0.699	17 3.2	29	4		23	1.291	1.058	15 51.3	28	7
	27	0.932	0.713	16 36.2	31	4		30	1.281	1.040	16 9.1	32	7
July	4	0.946	+0.729	-16 9.8	-33	+4	Dec.	7	1.266	+1.016	-16 25.0	+35	+6
	11	0.962	0.746	15 44.4	35	4		14	1.248	0.989	16 38.4	37	6
	18	0.980	0.764	15 20.6	36	5		21	1.226	0.960	16 49.0	39	6
	25	0.999	+0.784	-14 58.4	-38	+5		28	1.201	+0.929	-16 56.4	+40	+6

SATELLITE II.

Date.		AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.				Date.		AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.			
1881.		Factor for x' .	Factor for y' .	P .	Dis.		Resp.		1881.		Factor for x' .	Factor for y' .	P .	Dis.		Resp.	
					z .	y .	z .	y .						z .	y .	z .	y .
Jan. 2	1.067	+0.570	-24 29.7	+19	+7	+53	+7	Aug. 3	1.024	+0.692	-14 55.7	-52	+8	-19	+8		
9	1.042	0.553	24 26.2	+18	+7	52	7	11	1.046	0.713	14 38.4	53	8	20	8		
16	1.019	0.538	24 21.4			50	7	18	1.070	0.735	14 23.9	54	9	20	9		
23	0.998	0.526	24 15.2			48	6	25	1.094	0.758	14 12.4	55	9	20	9		
30	0.978	0.516	24 7.6			46	6	Sept. 1	1.119	0.781	14 4.1	56	9	19	9		
Feb. 7	0.960	+0.508	-23 58.8			+44	+6	8	1.145	+0.804	-13 59.3	-56	+9	-18	+9		
14	0.944	0.501	23 48.9			41	6	15	1.170	0.827	13 58.4	55	10				
21	0.930	0.496	23 37.6			38	6	22	1.195	0.849	14 1.3	53	10				
28	0.917	0.493	23 24.7			36	6	29	1.218	0.869	14 7.5	50	10				
Mar. 7	0.906	0.491	23 10.4			33	6	Oct. 6	1.240	0.887	14 17.4	47	11				
14	0.896	+0.490	-22 54.7			+30	+6	14	1.260	+0.902	-14 30.6	-44	+11				
21	0.889	0.491	22 37.5			+27	+6	21	1.276	0.913	14 46.5	40	11				
May 24	0.886	0.541	19 7.9	-28	+6			28	1.288	0.919	15 4.5	35	11				
31	0.893	0.552	18 40.5	31	6			Nov. 4	1.295	0.920	15 23.9	29	11				
June 8	0.901	+0.564	-18 12.9	-34	+6			11	1.298	+0.915	-15 43.9	-22	+11				
15	0.911	0.576	17 45.3	36	6			18	1.296	0.905	16 3.8			+26	+11		
22	0.923	0.589	17 18.1	39	6			25	1.288	0.890	16 22.8			32	11		
29	0.936	0.603	16 51.4	42	7			Dec. 2	1.275	0.871	16 40.3			37	10		
July 6	0.951	+0.619	-16 25.4	-44	+7			9	1.259	+0.848	-16 55.3			+42	+10		
13	0.967	0.636	16 0.5	46	7			16	1.240	0.823	17 7.7			46	10		
20	0.985	0.654	15 37.1	48	7			23	1.217	0.797	17 17.3			49	9		
27	1.004	+0.673	-15 15.4	-50	+8	-18	+8	31	1.192	+0.769	-17 33.6			+51	+9		

SATELLITE III.

Date.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.				Date.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.			
	Factor for x' .	Factor for y' .	P .	Dia.		Resp.			Factor for x' .	Factor for y' .	P .	Dia.		Resp.	
				z .	y .	z .	y .					z .	y .	z .	y .
1881.								1881.							
Jan. 2	1.064	+0.720	-24 56.8	+47	+12	+63	+12	Aug. 6	1.032	+0.927	-14 53.2	-65	+16	-49	+16
10	1.040	0.702	24 52.3	45	12	67	12	13	1.054	0.954	14 36.2	67	16	51	16
17	1.017	0.687	24 46.6	43	12	64	12	20	1.078	0.983	14 22.1	69	17	52	17
24	0.906	0.674	24 39.8	41	11	61	11	27	1.103	1.012	14 11.1	70	17	53	17
31	0.976	0.663	24 31.7	38	11	57	11	Sept. 4	1.129	1.042	14 4.0	69	17	52	17
Feb. 7	0.958	+0.655	-24 22.2	+34	+11	+53	+11	11	1.155	+1.071	-14 0.4	-68	+18	-50	+18
14	0.942	0.649	24 11.3	30	11	49	11	18	1.180	1.100	14 0.7	66	18	47	18
22	0.928	0.645	23 58.9	27	11	45	11	25	1.204	1.128	14 4.9	63	19	43	19
Mar. 1	0.915	0.644	23 45.1	23	11	41	11	Oct. 2	1.227	1.153	14 12.9	58	19	39	19
8	0.904	0.644	23 29.8	19	11	36	11	9	1.249	1.174	14 24.4	52	20	33	20
15	0.895	+0.644	-23 12.9	+15	+11	+32	+11	16	1.268	+1.191	-14 39.1	-45	+20	-25	+20
22	0.887	0.647	22 54.6	.	.	+27	11	24	1.282	1.203	14 56.4	37	21	-16	+21
May 26	0.887	0.724	19 12.8	-29	12	-14	12	31	1.291	1.208	15 15.5	28	21	.	.
June 2	0.895	0.739	18 43.6	34	12	19	12	Nov. 7	1.296	1.207	15 35.8	-18	+21	.	.
9	0.904	+0.755	-18 14.8	-38	+13	-23	+13	14	1.297	+1.199	-15 56.4	.	.	+13	+21
17	0.915	0.772	17 46.4	42	13	27	13	21	1.293	1.184	16 16.4	.	.	23	21
24	0.927	0.790	17 18.5	46	14	31	14	28	1.283	1.163	16 35.2	+12	20	31	20
July 1	0.940	0.809	16 50.9	50	14	35	14	Dec. 5	1.269	1.137	16 52.0	22	20	40	20
8	0.955	+0.830	-16 24.1	-53	+14	-38	+14	13	1.250	+1.108	-17 6.3	+29	+19	+48	+19
15	0.972	0.852	15 58.5	57	15	41	15	20	1.229	1.076	17 17.8	35	19	55	19
22	0.991	0.876	15 34.8	60	15	44	15	27	1.205	+1.041	-17 25.9	+40	+18	+60	+18
30	1.011	+0.901	-15 13.0	-63	+15	-47	+15								

478 SATURN'S RING, &c., 1881.

THE APPARENT ELEMENTS OF SATURN'S RING.							
Washington Mean Noon.	<i>a</i>	<i>b</i>	<i>p</i>	<i>l</i>	<i>l'</i>	<i>u</i> <i>u'</i> Earth's Longitude from Saturn counted on Plane of Ring from the Ring's As- cending Node on	
	Outer Major Axis.	Outer Minor Axis.	Inclination of Northern Semi-minor Axis to Circle of Declination from North to East.	The Elevation of the Earth above the Plane of the Ring.	The Elevation of the Sun above the Plane of the Ring.	Equator.	Ecliptic.
Jan. 0	41.46	9.38	+ 1° 51.4	— 13° 4.4	— 15° 26.5	74° 46.2	32° 0.6
20	39.99	9.27	1 47.0	— 13 24.6	— 15 42.4	75 19.3	32 33.8
Feb. 9	38.70	9.36	1 39.1	— 14 0.0	— 15 58.2	76 30.5	33 45.1
March 1	37.66	9.60	1 26.9	— 14 46.5	— 16 13.9	78 13.1	35 27.8
21	36.95	9.98	1 11.7	— 15 39.9	— 16 29.5	80 20.1	37 34.8
April 10	36.57	10.44	0 54.1	— 16 35.8	— 16 45.0	82 41.9	39 56.7
30	36.55	11.00	0 36.0	— 17 30.4	— 17 0.4	85 10.8	42 25.7
May 20	36.87	11.60	0 17.8	— 18 20.5	— 17 15.7	87 37.7	44 52.7
June 9	37.52	12.25	+ 0 0.6	— 19 3.5	— 17 30.8	89 54.9	47 10.0
29	38.49	12.93	— 0 14.2	— 19 37.3	— 17 45.8	91 53.2	49 8.3
July 19	39.73	13.59	0 25.6	— 20 0.4	— 18 0.6	93 23.8	50 39.0
Aug. 8	41.16	14.21	0 32.5	— 20 11.6	— 18 15.3	94 18.9	51 34.2
28	42.67	14.72	0 34.3	— 20 10.6	— 18 29.9	94 32.9	51 48.3
Sept. 17	44.06	15.04	0 30.7	— 19 57.8	— 18 44.3	94 4.2	51 19.6
Oct. 7	45.09	15.12	0 22.3	— 19 35.1	— 18 58.6	92 58.0	50 13.5
27	45.57	14.92	— 0 10.9	— 19 6.3	— 19 12.7	91 27.2	48 42.4
Nov. 16	45.38	14.49	+ 0 1.1	— 18 37.5	— 19 26.7	89 51.4	47 7.1
Dec. 6	44.56	13.96	0 11.0	— 18 15.3	— 19 40.5	88 31.7	45 47.4
26	43.28	13.43	0 16.8	— 18 5.1	— 19 54.2	87 45.0	45 0.8
31	42.91	13.32	+ 0 17.5	— 18 4.8	— 19 57.6	87 39.6	44 55.5
Factors which are to be multiplied by <i>a</i> and <i>b</i> to obtain the axes of							
The inner ellipse of the outer Ring				= 0.8801	log Factor = 9.9445		
The outer ellipse of the inner Ring				= 0.8599	" = 9.9344		
The inner ellipse of the inner Ring				= 0.6650	" = 9.8228		
The inner ellipse of BOND's dusky Ring				= 0.5486	" = 9.7392		
NOTE.—The sign of <i>l</i> indicates whether the visible surface of the Ring is northern or southern.							
THE APPARENT DISCS OF VENUS AND MARS.							
The Versed Sines of their Illuminated Portions, divided by their Apparent Diameters.							
1881.		Venus.	Mars.	1881.		Venus.	Mars.
January	1	.721	.986	July	30	.604	.867
	31	.611	.973	August	29	.712	.862
March	2	.459	.955	September	28	.808	.868
April	1	.235	.936	October	28	.884	.898
May	1	.005	.916	November	27	.939	.959
	31	.194	.897	December	27	.975	1.000
June	30	.429	.880				

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m				d	h	m		
Jan.	3	0	2	♂ ♀ ☾	.....	♀ - 6 39	April	21	9	-	♂ ♀ ☾
	6	9	24	♂ ♀ ☾	.....	♂ - 6 52		21	19	27	♂ ♀ ☾
	7	5	52	♂ ♀ ☾	.....	♂ - 7 43		21	21	-	♂ ♀ ☾
	8	5	-	♂ ♀ ☾	in Aphelion.			24	2	8	♂ ♀ ☾
	8	16	46	♂ ♀ ☾	.....	♂ - 5 44		26	6	30	♂ ♀ ☾
	11	18	-	♂ ♀ ☾	.....			26	14	-	♂ ♀ ☾
	18	22	21	♂ ♀ ☾	.....	♂ + 6 24		27	11	11	♂ ♀ ☾
	20	11	-	♂ ♀ ☾	stationary.			27	12	20	♂ ♀ ☾
	25	13	-	♂ ♀ ☾	Sup.			27	22	-	♂ ♀ ☾
	27	8	0	♂ ♀ ☾	.....	♂ - 1 53		28	5	49	♂ ♀ ☾
Feb.	28	14	-	♂ ♀ ☾	greatest Hel. Lat. S.		May	28	6	11	♂ ♀ ☾
	29	15	40	♂ ♀ ☾	.....	♂ - 6 11		1	22	-	♂ ♀ ☾
	30	12	-	♂ ♀ ☾	.....			2	17	-	♂ ♀ ☾
	31	14	-	♂ ♀ ☾	in ☾			3	15	-	♂ ♀ ☾
	1	19	59	♂ ♀ ☾	.....	♀ - 5 28		6	7	-	♂ ♀ ☾
	3	0	37	♂ ♀ ☾	.....	♂ - 6 26		7	6	-	♂ ♀ ☾
	3	15	57	♂ ♀ ☾	.....	♂ - 7 21		7	21	10	♂ ♀ ☾
	4	23	46	♂ ♀ ☾	.....	♂ - 5 32		8	6	-	♂ ♀ ☾
	15	2	12	♂ ♀ ☾	.....	♂ + 6 16		10	17	-	♂ ♀ ☾
	16	14	-	♂ ♀ ☾	in ☾			11	10	-	♂ ♀ ☾
Mar.	20	7	-	♂ ♀ ☾	greatest elong. E. 46 34		June	15	4	-	♂ ♀ ☾
	21	4	-	♂ ♀ ☾	in Perihelion.			15	14	-	♂ ♀ ☾
	21	12	-	♂ ♀ ☾	.....	♂ - 3 20		16	13	-	♂ ♀ ☾
	22	18	-	♂ ♀ ☾	greatest elong. E. 18 8			17	6	-	♂ ♀ ☾
	25	6	8	♂ ♀ ☾	.....	♂ - 4 12		20	4	-	♂ ♀ ☾
	28	23	8	♂ ♀ ☾	.....	♂ - 2 19		22	22	32	♂ ♀ ☾
	1	10	-	♂ ♀ ☾	.....	♂ - 5 29		23	3	-	♂ ♀ ☾
	1	11	-	♂ ♀ ☾	.....	♂ - 5 29		24	20	-	♂ ♀ ☾
	1	13	-	♂ ♀ ☾	stationary.			24	20	31	♂ ♀ ☾
	2	19	41	♂ ♀ ☾	.....	♂ - 5 53		25	0	6	♂ ♀ ☾
April	3	5	32	♂ ♀ ☾	.....	♂ - 6 52	June	25	6	53	♂ ♀ ☾
	3	8	7	♂ ♀ ☾	.....	♂ - 1 6		25	15	9	♂ ♀ ☾
	3	12	-	♂ ♀ ☾	greatest Hel. Lat. N.			26	4	-	♂ ♀ ☾
	4	9	7	♂ ♀ ☾	.....	♂ - 5 14		27	-	-	♂ ♀ ☾
	6	4	-	♂ ♀ ☾	in Perihelion.			28	9	53	♂ ♀ ☾
	10	16	-	♂ ♀ ☾	inf.			30	9	-	♂ ♀ ☾
	14	6	55	♂ ♀ ☾	.....	♂ + 6 13		30	11	-	♂ ♀ ☾
	19	18	-	♂ ♀ ☾	enters ♉, spring com.			4	5	40	♂ ♀ ☾
	22	16	-	♂ ♀ ☾	.....	♂ - 7 9		5	11	-	♂ ♀ ☾
	24	7	-	♂ ♀ ☾	stationary.			9	-	-	♂ ♀ ☾
April	26	4	29	♂ ♀ ☾	.....	♂ - 6 7	June	11	-	-	♂ ♀ ☾
	26	23	-	♂ ♀ ☾	in ☾			18	13	-	♂ ♀ ☾
	27	-	-	♂ ♀ ☾	at greatest brilliancy.			18	17	-	♂ ♀ ☾
	27	12	44	♂ ♀ ☾	.....	♂ - 5 33		18	19	-	♂ ♀ ☾
	28	2	-	♂ ♀ ☾	greatest Hel. Lat. N.			19	12	-	♂ ♀ ☾
	30	16	14	♂ ♀ ☾	.....	♂ - 5 20		20	14	-	♂ ♀ ☾
	30	20	36	♂ ♀ ☾	.....	♂ - 6 27		20	17	40	♂ ♀ ☾
	31	19	37	♂ ♀ ☾	.....	♂ - 4 56		21	11	6	♂ ♀ ☾
	1	3	27	♂ ♀ ☾	.....	♂ + 3 22		21	22	36	♂ ♀ ☾
	6	4	-	♂ ♀ ☾	in Aphelion.			21	23	23	♂ ♀ ☾
April	7	8	-	♂ ♀ ☾	greatest elong. W. 27 41		June	22	2	53	♂ ♀ ☾
	10	13	20	♂ ♀ ☾	.....	♂ + 6 19		22	23	-	♂ ♀ ☾
	11	11	-	♂ ♀ ☾	stationary.			26	11	-	♂ ♀ ☾
				♂ ♀ ☾	in Aphelion.						♂ ♀ ☾

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

June 28 ^d 0 ^h 21 ^m		♂ ☾ ☾ ♀ + 2° 26'	Sept. 26 ^d 11 ^h -	♂ in ☾	°
30 22 -		♂ ☾ in Apogee.	29 3 -	♂ in Aphelion.	
July 1 14 14		♂ ☾ ☾ ♂ + 6 28	Oct. 8 20 46	♂ ♀ ☾ ♀ - 5 19	
3 3 -		♂ ☾ in Aphelion.	9 5 10	♂ ☾ ☾ ♀ - 3 59	
3 14 -		♂ ☾ stationary.	9 20 49	♂ ♀ ☾ ♀ - 2 35	
6 3 -		♂ ♀ ♄ ♂ + 1 5	10 4 -	♂ ☾ ♀ ♂ - 0 32	
7 19 -		♂ ☾ greatest Hel. Lat. N.	13 6 55	♂ ☾ ☾ ♂ + 2 56	
11 20 -		♂ ☾ greatest elong. W. 45 44	15 21 -	♂ ☾ greatest elong. E. 24 43	
14 3 -		♂ ☾ ☾ ♀ - 0 33	16 20 -	♂ ☾ in Perihelion.	
17 0 -		♂ ☾ ☾ inf.	19 4 17	♂ ☾ ☾ ♂ + 6 19	
18 20 37		♂ ♀ ☾ ♀ - 5 36	19 12 -	♂ greatest Hel. Lat. S.	
19 0 -		♂ ☾ greatest Hel. Lat. S.	20 3 3	♂ ☾ ☾ ♀ + 6 48	
19 5 19		♂ ☾ ☾ ♀ - 4 33	24 4 15	♂ ☾ ☾ ♀ - 1 39	
19 11 54		♂ ☾ ☾ ♂ - 3 38	27 3 -	♂ ☾ stationary.	
19 14 17		♂ ♀ ☾ ♀ - 3 23	31 12 -	♂ ♀ ☾	
21 9 35		♂ ☾ ☾ ♀ - 3 27	Nov. 5 2 42	♂ ♀ ☾ ♀ - 5 29	
21 22 -		♂ ♀ ♄ ♂ - 0 7	5 13 26	♂ ☾ ☾ ♀ - 4 2	
23 13 -		♂ ☾ greatest Hel. Lat. S.	6 0 56	♂ ♀ ☾ ♀ - 2 48	
24 11 5		♂ ☾ ☾ ♀ - 1 35	6 17 -	♂ ☾ ☾ inf. and transit.	
27 9 -		♂ ☾ stationary.	7 8 -		
28 22 42		♂ ☾ ☾ ♂ + 6 19	7 12 -	♂ in ☾	
Aug. 3 16 -		♂ ☾ ☾ greatest elong. W. 19 6	7 19 -	♂ greatest Hel. Lat. N.	
5 12 -		♂ ☾ ☾	10 5 33	♂ ☾ ☾ ♂ + 4 44	
8 8 -		♂ ☾ in ☾	12 2 -	♂ ☾ in Perihelion.	
11 13 -			12 16 -	♂ ♀ ☾	
15 5 16		♂ ♀ ☾ ♀ - 5 25	15 15 17	♂ ☾ ☾ ♂ + 6 26	
15 12 22		♂ ☾ ☾ ♀ - 4 21	16 14 -	♂ ☾ stationary.	
16 3 -		♂ ☾ in Perihelion.	16 19 -	♂ ☾ stationary.	
16 3 2		♂ ♀ ☾ ♀ - 2 57	19 7 30	♂ ☾ ☾ ♀ + 4 33	
17 3 -		♂ ♀ ☾	19 14 23	♂ ☾ ☾ ♀ + 5 12	
17 5 17		♂ ☾ ☾ ♂ - 1 25	21 - -	☾ eclipsed, invis. at Wash.	
19 5 -		♂ ☾ stationary.	22 10 -	♂ greatest Hel. Lat. N.	
20 7 41		♂ ☾ ☾ ♀ + 1 5	23 20 -	♂ greatest elong. W. 20 0	
23 17 23		♂ ☾ ☾ ♀ + 6 50	Dec. 2 7 1	♂ ♀ ☾ ♀ - 5 36	
23 21 -		♂ ♀ stationary	2 20 4	♂ ☾ ☾ ♀ - 4 7	
25 7 36		♂ ☾ ☾ ♂ + 6 13	3 2 46	♂ ♀ ☾ ♀ E. 1 23	
26 10 -		♂ ☾ greatest Hel. Lat. N.	3 15 -	☾ eclipsed, invis. at Wash.	
30 17 -		♂ ☾ ☾ Sup.	5 - -	♂ ☾ ☾ ♂ + 5 51	
Sept. 2 14 -		♂ ☾ ☾ ♂ - 0 57	7 8 42	♂ ☾ ☾ Scorpii . ♀ - 0 5	
5 23 -		♂ ☾ ☾	8 5 -	♂ ☾ ☾	
11 13 24		♂ ♀ ☾ ♀ - 5 17	9 21 -	♂ ☾ ☾	
11 20 25		♂ ☾ ☾ ♀ - 4 8	10 0 -	♂ ☾ ☾ Scorpii . ♀ - 0 5	
12 13 26		♂ ♀ ☾ ♀ - 2 38	13 1 1	♂ ☾ ☾ ♂ + 6 3	
13 7 -		♂ ☾ in ☾	15 21 -	♂ ☾ in ☾	
14 3 -		♂ ☾ stationary.	19 8 57	♂ ☾ ☾ ♀ + 0 12	
14 20 42		♂ ☾ ☾ ♂ + 0 51	19 18 26	♂ ☾ ☾ ♀ - 1 22	
18 22 -		♂ ☾ in ☾	20 23 -	☾ enters ♄, winter com.	
19 16 55		♂ ☾ ☾ ♀ + 5 23	23 1 -	♂ ☾ stationary.	
20 19 -		♂ ☾ ☾	26 2 -	♂ ☾ in Aphelion.	
21 17 27		♂ ☾ ☾ ♂ + 6 13	26 12 -	♂ ☾ ☾	
22 5 -		☾ enters ♄, autumn com.	29 10 54	♂ ♀ ☾ ♀ - 5 32	
24 10 59		♂ ☾ ☾ ♀ + 3 25	30 1 4	♂ ☾ ☾ ♀ - 4 6	
25 8 -		♂ ☾ ☾ Leonis . ♀ + 0 12	30 5 0	♂ ♀ ☾ ♀ - 3 6	

POSITIONS OF THE PRINCIPAL OBSERVATORIES.

(North Latitudes and West Longitudes are considered as positive.)

Place.	Latitude.	Longitude —		Reduction to Geocentric Latitude.	Log ρ
		From Washington.	From Greenwich.		
Åbo	+ 60 26 56.8	— 6 37 20.0	— 1 29 7.9	9 53.5	9.998902
Adelaide	— 34 57	— 14 22 33.3	— 9 14 21.2	10 47.8	9.999526
Albany	+ 42 39 49.5	— 0 13 12.87	+ 4 54 59.22	11 28.2	9.999336
Alfred	+ 42 15 19.8	+ 0 2 54.9	+ 5 11 7.0	11 27.2	9.999346
Allegheny	+ 40 27 36.0	+ 0 11 50.56	+ 5 20 2.65	11 21.6	9.999391
Altona	+ 53 32 45.3	— 5 47 58.2	— 0 39 46.1	11 0.8	9.999063
Amherst	+ 42 22 15.6	— 0 18 4.8	+ 4 50 7.3	11 27.5	9.999343
Annapolis	+ 38 58 53	— 0 2 16.0	+ 5 5 56.1	11 15.0	9.999428
Ann Arbor	+ 42 16 48.0	+ 0 26 43.10	+ 5 34 55.19	11 27.3	9.999346
Armagh	+ 54 21 12.7	— 4 41 36.6	+ 0 26 35.5	10 54.9	9.999043
Athens	+ 37 58 20.0	— 6 43 7.8	— 1 34 55.7	11 9.4	9.999453
Berlin	+ 52 30 16.7	— 6 1 47.0	— 0 53 34.9	11 7.7	9.999088
Berne	+ 46 57 6.0	— 5 37 57.7	— 0 29 45.6	11 29.2	9.999227
Birr Castle	+ 53 5 47.0	— 4 36 31.2	+ 0 31 40.9	11 3.9	9.999074
Bologna	+ 44 29 47.0	— 5 53 36.7	— 0 45 24.6	11 30.5	9.999239
Bonn	+ 50 43 45.0	— 5 36 36.0	— 0 28 23.9	11 17.4	9.999132
Bothkamp	+ 54 12 9.6	— 5 48 42.9	— 0 40 30.8	10 56.0	9.999047
Breslau	+ 51 6 56.5	— 6 16 21.2	— 1 8 9.1	11 15.4	9.999122
Brussels	+ 50 51 10.7	— 5 25 40.5	— 0 17 28.4	11 16.8	9.999129
Cambridge, (Eng.)	+ 52 12 51.6	— 5 8 34.8	— 0 0 22.7	11 9.5	9.999085
Cambridge, (Mass.)	+ 42 22 48.1	— 0 23 41.11	+ 4 44 30.98	11 27.6	9.999343
Cape of Good Hope	— 33 56 3.5	— 6 22 7.8	— 1 13 55.7	10 39.0	9.999550
Charkow	+ 50 0 10.2	— 7 33 6.8	— 2 24 54.7	11 20.5	9.999150
Chicago	+ 41 50 1.0	+ 0 42 13.83	+ 5 50 25.92	11 26.2	9.999357
Christiania	+ 59 54 43.7	— 5 51 6.3	— 0 42 54.2	10 0.2	9.998914
Cincinnati, (old obs.)	+ 39 6 26.5	+ 0 29 46.94	+ 5 37 59.03	11 15.6	9.999425
Cincinnati, (new obs.)	+ 39 8 35.5	+ 0 29 29.42	+ 5 37 41.51	11 15.8	9.999424
Clinton	+ 43 3 16.5	— 0 6 34.65	+ 5 1 37.44	11 28.9	9.999326
Coimbra	+ 40 12 25.8	— 4 34 37.6	+ 0 33 34.5	11 20.6	9.999398
Copenhagen	+ 55 41 13.6	— 5 58 31.3	— 0 50 19.2	10 44.0	9.999011
Cordoba	— 31 25 15.4	— 0 51 27.0	+ 4 16 45.1	10 13.5	9.999608
Cracow	+ 50 3 59.0	— 6 28 2.6	— 1 19 50.5	11 20.3	9.999149
Dantzic	+ 54 21 18.0	— 6 22 51.5	— 1 14 39.4	10 54.9	9.999043
Dorpat	+ 58 22 47.1	— 6 55 5.6	— 1 46 53.5	10 17.6	9.998448
Dublin	+ 53 23 13.0	— 4 42 50.1	+ 0 25 22.0	11 1.9	9.999066
Düsseldorf	+ 51 12 25.0	— 5 35 17.0	— 0 27 4.9	11 15.0	9.999120
Durham	+ 54 46 6.2	— 5 1 52.3	+ 0 6 19.8	10 51.6	9.999033
Edinburgh	+ 55 57 23.2	— 4 55 28.5	+ 0 12 43.6	10 41.5	9.999005
Florence	+ 43 46 4.1	— 5 53 13.6	— 0 45 1.5	11 29.9	9.999308
Geneva	+ 46 11 58.8	— 5 32 49.2	— 0 24 37.1	11 30.1	9.999246
Georgetown	+ 38 54 26.2	+ 0 0 6.20	+ 5 8 18.29	11 14.6	9.999430
Glasgow, (Mo.)	+ 39 16 16.8	+ 1 3 9	+ 6 11 20.1	11 16.4	9.999421
Glasgow, (Scot.)	+ 55 52 42.8	— 4 51 1.5	+ 0 17 10.6	10 42.2	9.999006
Göttingen	+ 51 31 47.9	— 5 47 58.3	— 0 39 46.2	11 13.3	9.999112
Gotha	+ 50 56 37.5	— 5 51 2.6	— 0 42 50.5	11 16.2	9.999127
Greenwich	+ 51 28 38.4	— 5 8 12.09	0 0 0.0	11 13.6	9.999113
Hamburg	+ 53 33 7.0	— 5 49 5.8	— 0 39 53.7	11 0.8	9.999062
Hanover	+ 43 42 15.2	— 0 19 3.56	+ 4 49 8.53	11 29.3	9.999309
Haverford	+ 40 0 36.5	— 0 6 59.34	+ 5 1 12.75	11 19.8	9.999402
Helsingfors	+ 60 9 42.3	— 6 48 1.2	— 1 39 49.1	9 57.2	9.998979
Hudson	+ 41 14 42.6	+ 0 17 32.06	+ 5 25 44.15	11 24.4	9.999371
Kasan	+ 55 47 24.2	— 8 24 41.0	— 3 16 28.9	10 42.9	9.999009
Kiel	+ 54 20 29.7	— 5 48 47.6	— 0 40 35.5	10 55.0	9.999043
Kiew	+ 50 27 12.5	— 7 10 13.2	— 2 2 1.1	11 18.6	9.999139
Königsberg	+ 54 42 50.6	— 6 30 11.0	— 1 21 58.9	10 52.0	9.999034
Kremsmünster	+ 48 3 23.7	— 6 4 44.3	— 0 56 32.2	11 27.0	9.999199
Lehigh	+ 40 36 23.7	— 0 6 40.3	+ 5 1 31.8	11 22.2	9.999388
Leipzig	+ 51 20 6.3	— 5 57 46.1	— 0 49 34.0	11 14.3	9.999117
Leyden	+ 52 9 20.3	— 5 26 8.3	— 0 17 56.2	11 9.8	9.999097

POSITIONS OF THE PRINCIPAL OBSERVATORIES.

(North Latitudes and West Longitudes are considered as positive.)

Place.	Latitude.	Longitude —		Reduction to Geocentric Latitude.	Log ρ
		From Washington.	From Greenwich.		
Leyton	+ 51° 34' 34.0	— 5 8 11.2	+ 0 0 0.9	11' 13.0	9.999111
Lisbon	+ 38 42 31.3	— 4 31 36.0	+ 0 36 36.1	11 13.6	9.999435
Liverpool	+ 53 24 3.8	— 4 55 55.0	+ 0 12 17.1	11 1.8	9.999066
Lübeck	+ 53 51 31.2	— 8 50 57.7	— 0 42 45.6	10 58.6	9.999055
Lund	+ 55 41 54.0	— 6 0 57.1	— 0 52 45.0	10 43.8	9.999011
Madras	+ 13 4 8.1	— 10 29 9.4	— 5 20 57.3	5 3.3	9.999926
Madrid	+ 40 24 29.7	— 4 53 26.7	+ 0 14 45.4	11 21.4	9.999393
Manheim	+ 49 29 11.0	— 5 42 2.9	— 0 33 50.8	11 22.5	9.999163
Marbury	+ 50 48 46.9	— 5 43 17.1	— 0 35 5.0	11 16.9	9.999130
Markree	+ 54 10 31.8	— 4 34 23.7	+ 0 33 48.4	10 56.2	9.999047
Marseilles	+ 43 18 19.1	— 5 29 46.9	— 0 21 34.8	11 29.3	9.999320
Melbourne	— 37 49 53.3	— 14 48 6.9	— 9 39 54.8	11 8.6	9.999456
Mexico	+ 19 26 1	+ 1 28 14.5	+ 6 36 26.6	7 12.3	9.999840
Milan	+ 45 28 0.7	— 5 44 58.9	— 0 36 46.1	11 30.6	9.999265
Modena	+ 44 38 52.8	— 5 51 54.9	— 0 43 42.8	11 30.6	9.999285
Moscow	+ 55 45 19.8	— 7 38 29.0	— 2 30 16.9	10 43.4	9.999009
Munich	+ 48 8 45.0	— 5 54 38.0	— 0 46 25.9	11 26.7	9.999197
Naples	+ 40 51 45.4	— 6 5 10.9	— 0 56 58.8	11 23.1	9.999381
Neuchâtel	+ 47 0 1.2	— 5 36 2.2	— 0 27 50.1	11 29.1	9.999226
New York	+ 40 43 48.5	— 0 12 15.47	+ 4 55 56.62	11 22.6	9.999384
Nicolaëff	+ 46 58 20.6	— 7 16 6.2	— 2 7 54.1	11 29.2	9.999226
Odessa	+ 46 28 36.2	— 7 11 14.5	— 2 3 2.4	11 29.8	9.999239
Ogden	+ 41 13 8.6	+ 2 19 47.52	+ 7 27 59.61	11 24.3	9.999373
O-Gyalla	+ 47 52 43.4	— 6 21 8.0	— 1 12 55.9	11 27.4	9.999204
Olmütz	+ 49 35 43.0	— 6 17 15.56	— 1 9 3.47	11 22.1	9.999106
Oxford, (Radcliffe)	+ 51 45 36.0	— 5 3 9.5	+ 0 5 2.6	11 12.0	9.999106
Oxford, (University)	+ 51 45 34.2	— 5 3 11.69	+ 0 5 0.40	11 12.0	9.999106
Padua	+ 45 24 2.5	— 5 55 41.1	— 0 47 29.0	11 30.6	9.999266
Palermo	+ 38 6 44.0	— 6 1 36.2	— 0 53 24.1	11 10.2	9.999449
Paramatta	— 33 48 49.8	— 15 12 18.3	— 10 4 6.2	10 37.8	9.999553
Paris	+ 48 50 11.2	— 5 17 32.7	— 0 9 20.6	11 24.8	9.999180
Philadelphia	+ 39 57 7.5	— 0 7 33.64	+ 5 0 38.45	11 19.5	9.999404
Pola	+ 44 51 49.0	— 6 3 35.6	— 0 55 23.5	11 30.6	9.999280
Prague	+ 50 5 18.5	— 6 5 53.4	— 0 57 41.3	11 20.2	9.999148
Princeton	+ 40 21 47	— 0 9 35.3	+ 4 58 36.8	11 21.3	9.999394
Pulkowa	+ 59 46 18.7	— 7 9 30.7	— 2 1 18.6	10 1.8	9.999917
Rome	+ 41 53 53.7	— 5 58 5.8	— 0 49 53.7	11 26.3	9.999355
San Fernando	+ 36 27 40.4	— 4 43 22.3	+ 0 24 49.6	10 59.5	9.999490
Santiago	— 33 26 42.0	— 0 15 29.7	+ 4 52 42.4	10 34.4	9.999561
Schwerin	+ 53 37 38.2	— 5 53 52.8	— 0 45 40.7	11 0.2	9.999061
Senftenburg	+ 50 5 10.1	— 6 14 2.7	— 1 5 50.6	11 20.2	9.999148
Speier	+ 49 18 55.4	— 5 41 57.7	— 0 33 45.6	11 23.2	9.999167
Stockholm	+ 59 20 34.0	— 6 20 26.3	— 1 12 14.2	10 6.9	9.999927
Stonyhurst	+ 53 50 40.0	— 4 58 19.4	+ 0 9 52.7	10 58.7	9.999055
St. Petersburg	+ 59 56 29.7	— 7 9 25.6	— 2 1 13.5	9 59.8	9.999913
Strassburg	+ 48 34 55.0	— 5 39 14.5	— 0 31 2.4	11 25.5	9.999186
Sydney	— 33 51 41.1	— 15 13 12.66	— 10 4 50.57	10 38.3	9.999562
Toulouse	+ 43 36 47.0	— 5 14 3.1	— 0 5 51.0	11 29.7	9.999312
Turin	+ 45 4 6.0	— 5 39 0.5	— 0 30 48.4	11 30.7	9.999275
Twickenham	+ 51 27 4.2	— 5 6 59.0	+ 0 1 13.1	11 13.7	9.999114
Upsala	+ 59 51 31.5	— 6 18 42.1	— 1 10 30.0	10 0.8	9.999915
Utrecht	+ 52 5 10.5	— 5 28 43.4	— 0 20 31.3	11 10.2	9.999098
Venice	+ 45 25 49.5	— 5 57 37.5	— 0 49 25.4	11 30.6	9.999266
Vienna	+ 48 12 35.5	— 6 13 43.8	— 1 5 31.7	11 26.6	9.999196
Warsaw	+ 52 13 5.7	— 6 32 19.5	— 1 24 7.4	11 9.4	9.999096
Washington	+ 38 53 38.8	0 0 0.0	+ 5 8 12.09	11 14.5	9.999430
Wilna	+ 54 41 0.0	— 6 49 24.0	— 1 41 11.9	10 52.3	9.999035
Windsor	— 33 36 29.2	— 15 11 27.5	— 10 3 15.4	10 36.0	9.999558
Zürich	+ 47 22 42.1	— 5 42 24.0	— 0 34 11.9	11 28.5	9.999216

ON THE ARRANGEMENT AND USE OF THE TABLES IN THIS EPHEMERIS.

THE NAUTICAL PART.

THIS Part of the AMERICAN EPHEMERIS AND NAUTICAL ALMANAC is designed for the special use of NAVIGATORS and therefore adapted to the Meridian of Greenwich. It contains the Ephemeris of the sun and moon; the distances of the moon from the centres of the sun and the four most conspicuous planets, and from certain fixed stars; the Ephemerides of the planets Venus, Mars, Jupiter, and Saturn; and the Mean Places of 206 principal fixed stars for the beginning of the year 1881.

Time.—Astronomers make use of several different kinds of time; an explanation of the nature of which, and of the method of passing from one to another, properly precedes an explanation of the uses of the Ephemeris.

Solar Time.—Solar time is that used for all the purposes of ordinary life, and is measured by the daily motion of the sun. A *Solar Day* is the interval of time between two successive transits of the sun over the same meridian; and the hour angle of the sun is called *Solar Time*. This is the most natural and direct measure of time. But the intervals between the successive returns of the sun to the meridian are not exactly equal, owing to the varying motion of the earth round the sun, and to the obliquity of the ecliptic. The intervals between the sun's transits over the meridian being unequal, it is impossible to regulate a clock or chronometer so that it shall follow the sun.

To avoid the irregularity which would arise from using the true sun as the measure of time, a fictitious sun, called a *Mean Sun*, is supposed to move in the equator with a uniform velocity. This mean sun is supposed to keep, on the average, as near the real sun as is consistent with perfect uniformity of motion; it is sometimes in advance of it, and sometimes behind it, the greatest deviation being about 16 minutes.

Mean Time, which is perfectly equable in its increase, is measured by the motions of this *Mean Sun*. The clocks in ordinary use, and chronometers used by Navigators, are regulated to *mean* time.

True or Apparent Time is measured by the motion of the real sun.

The difference between the *apparent* and *mean* time is called the *Equation of Time*. By means of it we change *apparent* to *mean* time, or the reverse. Thus, if the *apparent* time be given, the *mean* time corresponding to it will be obtained by adding or subtracting the equation of time, according to the precept at the head of the column in which it is found, on page I. of the Calendar. If the *mean* time be given, the *apparent* time is obtained by applying the equation of time as directed by the precept on page II. of the Calendar.

Sidereal Time.—Sidereal time is measured by the daily motion of the stars, or, as it is used by astronomers, by the daily motion of that point in the equator from which the true right ascensions of the stars are counted. This point is the vernal equinox, and its hour angle is called the *Sidereal Time*. Astronomical clocks, regulated to sidereal time, are called sidereal clocks.

A *Sidereal Day* is the interval of time between the transit of the vernal equinox over any meridian, and its next succeeding return to the same meridian. It is about $3^m 56^s$ shorter than the mean solar day; $365\frac{1}{4}$ solar days, or a year, being divided into $366\frac{1}{4}$ sidereal days. It is divided into 24 hours. The sidereal hours are counted from 0 to 24, commencing with the instant of the passage of the true vernal equinox over the upper meridian, and ending with its return to the same meridian. About March 21 of each year the sidereal clock agrees with the mean time or ordinary clock, and it gains on it about $3^m 56^s$ per day, so that at the end of a year it will have gained an entire day, and will again agree with it.

The vernal equinox is not a fixed, but a movable, point on the equator. Its motion is composed of two parts: precession, which is proportional to the time and is combined with the daily motion of the heavens; and nutation, which is periodical. In consequence of the latter, the daily motion of the equinox is not strictly a uniform measure of time, and the sidereal time in common use might therefore be called *Apparent Sidereal Time*; and *Mean Sidereal Time* would be that reckoned from the transit of the mean equinox; but the irregularity referred to cannot exceed $2^s.3$ in a period of nineteen years, and is, therefore, of no practical importance.

Day.—The *civil day*, according to the customs of society, commences at midnight, and comprises twenty-four hours from one midnight to the next following. The hours are counted from 0 to 12 from midnight to noon, after which they are again reckoned from 0 to 12 from noon to midnight. Thus the day is divided into two periods of 12 hours each; the first of which is marked A. M., the last is marked P. M.

The *astronomical day* commences at noon of the civil day of the same date. It also comprises twenty-four hours, but they are reckoned from 0 to 24, and from the noon of one day to that of the next following. The astronomical as well as the civil time may be either *apparent* or *mean*, according as it is reckoned from *apparent* noon or from *mean* noon.

The civil day begins twelve hours before the astronomical day; therefore the first part of the *civil day* answers to the last part of the preceding *astronomical day*, and the last part of the *civil day* to the first part of the same *astronomical day*. Thus, January 9th, 2 o'clock A. M., *civil time*, is January 8th, 14^h , *astronomical time*; and January 9th, 2 o'clock P. M., *civil time*, is also January 9th, 2^h , *astronomical time*. The rule, then, for the transformation of civil time into astronomical time is this: If the civil time is marked A. M., take one from the day and add twelve to the hours, and the result is the astronomical time wanted; if the civil time is marked P. M., take away the designation P. M., and the astronomical time is had without further change.

To change astronomical to civil time, we simply write P. M. after it, if it is less than 12 hours. If greater than 12 hours, we subtract 12 hours from it, add one to the days, and write A. M. For example, January 3, 23 hours astronomical time is January 4, 11 o'clock A. M. civil time.

If the longitude from Greenwich be expressed in time, and, when *west*, *added* to the local time, or, when *east*, *subtracted* from the local time, the result is the corresponding Greenwich time. If the local mean time is used, the result is the *Greenwich mean time*, which ordinarily is that required for the use of this Part of the Ephemeris. The rule is the same, whether we use mean or sidereal time.

THE CALENDAR.—The Calendar is divided into twelve months, and to each month are assigned eighteen pages, of which the contents are as follows:

Page I. contains the *Apparent Right Ascension and Declination* of the Sun and the *Equation of Time* for each Greenwich *apparent* noon. Adjoining columns contain the

differences of these quantities for one hour. By multiplying this difference by the hours and parts of an hour from Greenwich apparent noon, and adding the amount to, or subtracting it from, the quantity at noon, according as that quantity is increasing or decreasing, we obtain the value of the quantity for any given *Greenwich apparent time*. The hourly differences are given for the instant of apparent noon at Greenwich, and, when great accuracy is required, should be first interpolated for *half* the hours and parts of an hour of the Greenwich apparent time.

This page is chiefly used when the sun is observed on the meridian, and the local apparent time is 0. The longitude from Greenwich expressed in time, if *west*, is at that instant the Greenwich apparent time, or time *after* Greenwich apparent noon; if *east*, it is time *before* Greenwich apparent noon. The longitude of any place is therefore employed in reducing the quantities on this page to apparent noon at that place.

The Right Ascension of the sun thus reduced is the *Sidereal Time of local apparent noon*. The difference between it and the clock time of the meridian passage of the sun is the error of the clock on *sidereal* time.

The Declination of the sun reduced to the meridian, or apparent noon, of the place, is required in finding the latitude from a meridian altitude of the sun.

As an example of the use of this page, let the sun's declination be required at noon of May 20th, 1881, in longitude $146^{\circ} 4' E.$, or $- 9^h 44^m 16^s$. We find

Local Apparent Time,	May 20,	^h 0	^m 0	^s 0
Longitude from Greenwich, (subtractive),			9	44 16
Greenwich Apparent Time,	May 19,	14	15	44

Reducing the minutes and seconds to decimals of an hour, we find that this moment is $14^h.262$ after Greenwich apparent noon on May 19, or $9^h.738$ before Greenwich apparent noon on May 20.

On page 74 of the Ephemeris we find that the change of declination in one hour is

May 19, at noon,	31".81
May 20, at noon,	30.96
Difference for one day,	0.85

If we want to be very exact, we find the amount of this hourly difference for the time which is half way between Greenwich noon and the time of observation, that is, for 7^h after Greenwich noon of the 19th, this being half of 14 hours. Seven hours is about 0.3 of a day, so the calculation is,

Difference for one hour, May 19,	31".81
Change for one day (or $0''.85 \times 0.3$, . . . . .	.25
Difference at 7 hours afternoon,	31.56
$31''.56 \times 14^h.262 = 450''.1 = 7' 30''.1$	
Declination at Greenwich Noon, May 19,	$19^{\circ} 51' 31''.0$ N.
Change in 14.262 hours, (additive),	7 30.1
Declination at time of observation,	19 59 1.1

When the time of observation is only a few hours before Greenwich noon, it may be better to count the longitude backward from this nearest noon. Thus, in the example just given, the time is $9^h.738$ before Greenwich noon of May 20; the middle of the interval between the time of observation and this noon is about two-tenths of a day before noon, and the hourly motion for this time is $31''.13$. Then, we find

Sun's declination at noon of May 20,	$20^{\circ} 4' 4''.5$ N.
Product of $31''.13 \times 9^h.738 = 303''.1 =$	5 3.1
Sun's declination for observation,	19 59 1.4

It will always be well to make the calculation by both methods, as their agreement will show both to be right.

At sea it is ordinarily sufficient to have the declination to the nearest half minute; and the reduction may be found by Table V. of Bowditch's *American Practical Navigator*.

The *Equation of Time*, as has been before explained, is the number of minutes and seconds to be added to or subtracted from the *apparent* time, or the time given by an observation of the sun, to obtain the *mean* time. The heading of the column directs the manner in which the equation is to be applied. Where there is a change in the course of the month from addition to subtraction, or the reverse, as in the months of April and June, the two different directions are separated by a line, while a corresponding line below points out the date at which the change takes place. The equation of time, as given on page I., is the *mean* time of *apparent* noon, or the hour angle of the mean sun at that instant.

On page I. are also given the *Sun's Semidiameter*, which is used in reducing the altitude of a limb of the sun, or the angular distance of the limb from the moon or some other object, to the altitude, or distance, of the centre of the sun; and the *Sidereal Time of the Semidiameter passing the Meridian*, which is employed in obtaining the passage of the sun's centre over the wires of a transit-instrument, when the passage of one limb only has been observed. The quantity found in this column is to be added to the time of transit of the *first*, or western, limb, to be subtracted from the time of transit of the *second*, or eastern, limb.

Page II. contains for each Greenwich *mean* noon the *Apparent Right Ascension* and *Declination of the Sun*, the *Equation of Time*, and the *Sidereal Time of Mean Noon*. The hourly changes of these quantities are also given for noon, and may be used in reducing them to any given Greenwich *mean* time. The hourly changes may be first interpolated for *half* the Greenwich time, when great precision is required, in the way described in explaining the calculation of the declination.

The Right Ascension and Declination on pages I. and II. are affected by *Aberration*, and therefore denote the *apparent* position of the *true* sun. Page II. is more conveniently used when the *mean* time is known. This is the case in most observations of the sun out of the meridian, when the times have been noted by a clock or chronometer regulated to *mean* time. The quantities on this page can be reduced to mean noon of any place by interpolating for the longitude, as in the example of the sun's declination on the preceding page.

The sun's declination is required for finding the latitude of the place, the local time, and the sun's azimuth and amplitude, from observations of the sun.

The equation of time is needed in finding the mean time from observations of the sun, and the latitude from other than meridian observations. The heading of the column directs the manner in which it is to be applied to *mean* time to obtain the *apparent* time.

As given on page II., the equation of time is the apparent time of mean noon; and in general it is the hour angle of the *true* sun at the instant of *mean* noon.

The *Sidereal Time of Mean Noon* is also the *Right Ascension of the Mean Sun at noon*. It may be reduced for the longitude, or to any Greenwich *mean* time, by using the hourly difference, $9^{\circ}.8565$; or by Table III., in the Appendix of the *American Ephemeris*, for *reducing intervals of mean solar to sidereal time*. Table LI. of Bowditch's *Navigator* may be used for the same purpose when the nearest quarter of a second only is required.

The sun's right ascension and the sidereal time of mean noon, or right ascension of the mean sun, are useful in converting solar time to sidereal time. If we add the right ascension of the *true* sun to the *apparent* time, or the right ascension of the *mean* sun to the *mean* time, the result will be the *sidereal* time.

The sidereal time of mean noon reduced for the longitude of the place, is also used in converting sidereal time to mean time. Subtracting the reduced value from the given sidereal time, gives the interval of sidereal time from noon. Subtracting from this the corresponding reduction of a *sidereal interval to a mean time interval*, in Table II. of the

American Ephemeris or Table LII. of Bowditch's *Navigator*, will give the mean time required. This reduction may also be found by multiplying $9^s.8296$ by the hours and parts of an hour of the given *sidereal* time.

As examples of the use of page II.:

1. Let the sun's right ascension and the equation of time be required for 1881, June 4, $6^h 12^m 13^s$ A. M. mean time at a place whose longitude is $118^\circ 14'$ E.

The local astronomical mean time is	June 3,	$18^h 12^m 13^s$
The longitude in time,	—	$7^h 52^m 56^s$
The Greenwich mean time,	June 3,	$10^h 19^m 17^s$
	or June 3,	10.3214

Sun's R. A.		Equation of time.	
June 3, Noon,	$4^h 46^m 13.49^s$	June 3, Noon,	$2^m 5.90^s$ Additive.
H. D. $10^s.273 \times 10.3214$	$+ 1^m 46.03^s$	H. D. $-0^s.416 \times 10.3214$	$- 4.29^s$
	$4^h 47^m 59.52^s$		$2^m 0.91^s$

In this case the hourly differences interpolated to $5^h.3$ have been used.

The equation of time in this example is *additive* to mean time. Its reduction could have been found by Table VI., A., of Bowditch's *Navigator* to seconds only.

2. If the *sidereal* time is required for the same date and time, we have

June 3, Noon, the R. A. of the mean sun,	$4^h 48^m 18.69^s$
Add the H. D. $9^s.8565 \times 10.3214$, or	$+ 1^m 41.73^s$
Add the local astronomical mean time,	$18^h 12^m 13.00^s$
The required <i>sidereal</i> time is,	$23^h 2^m 13.42^s$

The reduction $1^m 41.73$ could have been found in Table III. corresponding to the Greenwich mean time, $10^h 19^m 17^s$. By Table LI. of Bowditch's *Navigator*, the reduction is $1^m 41.7$.

3. 1881, June 4, A. M., at a place whose longitude is $118^\circ 14'$ E., suppose the *sidereal* time to be $23^h 3^m 10^s.72$, and that the corresponding mean time is required.

The astronomical day is June 3; the longitude in time — $7^h 52^m 56^s$, or — $7^h.882$.

June 3, the <i>sidereal</i> time of Greenwich mean noon is	$4^h 48^m 18.69^s$
The H. D. $9^s.8565 \times (-7.882)$, or the red. for $7^h 52^m 56^s$ in Table III.	$- 1^m 17.69^s$
The <i>sidereal</i> time of local noon,	$4^h 47^m 1.00^s$
The given <i>sidereal</i> time (+ 24^h , if necessary for the following subtraction)	$23^h 3^m 10.72^s$
Subtracting the first from the second gives the <i>sidereal</i> interval from noon	$18^h 16^m 9.72^s = 18^h.269$
— $9^s.8296 \times 18.269$ or the reduction for $18^h 16^m 9^s$,	$- 2^m 59.58^s$
The required astronomical mean time is,	June 3, $18^h 13^m 10.14^s$

Page III. contains the *Longitude* and *Latitude of the Sun*, and the *Logarithm of its Distance from the Earth*, at Greenwich mean noon of each day. The longitude is given in two columns, headed λ and λ' ; λ representing the sun's longitude counted from the true equinox of the date; and λ' the same coördinate counted from the mean equinox of the beginning of the year, (Jan. 0.0). A column of hourly differences enables the computer to obtain the sun's longitude for any hour from noon. The hourly differences of the logarithm of the radius vector are likewise given. The longitudes of the sun are the true longitudes, not affected by aberration. The latitude is referred to the ecliptic of the date.

The last column on page III. contains the *Mean Time of Sidereal 0^h*, that is, the number of hours, minutes and seconds after Greenwich mean noon, when the first point of Aries passes the meridian of Greenwich. It may be reduced to any meridian by interpolating for the longitude, or to any Greenwich *sidereal* time by means of the hourly difference, — $9^s.8296$. The reduction, however, can be taken directly from Table II.

* Given in Table II. of the Appendix.

of the American Ephemeris for *reducing intervals of sidereal time to mean solar time*, or approximately, from Table LII. of BOWDITCH'S *Navigator*.

This column may be used in converting sidereal time to mean time instead of that on page II. As an illustration, let us take Example 3, above.

It is seen in advance that the sum of the mean time of sidereal 0^h and the given sidereal time is greater than 24^h. Therefore the mean time of sidereal 0^h is taken out for June 2, that is the *preceding* astronomical day.

June 2 the mean time of Greenwich sidereal 0 ^h is	June 2, 19 12 28.53
The H. D. — 9 ^h .8296 × (— 7.882), or the red. for long., Table II.,	+ 1 17.43
The mean time of local sidereal 0 ^h ,	June 2, 19 13 46.01
Add the given sidereal time,	23 3 10.72 = 23 ^h .053
The sum (rejecting 24 ^h) is	June 3, 18 16 56.73
— 9 ^h .8296 × 23.053, or the red. for 23 ^h 3 = 11 ^h in Table II.,	— 3 46.60
The required astronomical mean time,	June 3, 18 13 10.13

Page IV. contains the *Moon's Semidiameter* and *Equatorial Horizontal Parallax* for each mean noon and midnight at Greenwich. Columns adjoining those of the horizontal parallax give the change of this quantity in one hour, by means of which it can be reduced to any other Greenwich mean time in the same way as the sun's declination and the equation of time in the preceding examples. The sign *plus or minus* (+ or —) prefixed to the hourly differences, shows whether the horizontal parallax is increasing or decreasing.

The reduction of the moon's semidiameter may be readily found by multiplying the reduction of the horizontal parallax by 0.273. It may also be obtained from Table XI. of BOWDITCH'S *Navigator*, or by simply computing the proportional part.

If, for example, the semidiameter of the moon is to be taken out for 1881, June 20, 9^h P. M., Greenwich mean time, we see that the difference of the semidiameters at noon and midnight of June 20 is 5''.4; then

$$\text{as } 12^h : 9^h = 5''.4 : 4''.0$$

which is the correction to be *subtracted from* the semidiameter at noon, because the semidiameter is *diminishing*. The moon's semidiameter then, for June 20, 9^h, is, 15' 35''.2 — 4''.0, or 15' 31''.2.

The moon's semidiameter and horizontal parallax are required for all observations of the moon. When great precision is needed, the hourly differences should be first interpolated for *half* the interval of Greenwich time from noon or midnight, and a correction applied to the horizontal parallax for the latitude of the place of observation.

The *Mean Time of the Moon's Meridian Passage* at Greenwich, which is given on page IV. to minutes and tenths of minutes, is also accompanied with a column of differences for one hour of longitude, by means of which, having the longitude turned into time, the time of the moon's meridian passage at any other place may be computed. The reduction may be taken from BOWDITCH'S Table XXVIII. by simple inspection. The last column of this page contains the *Age of the Moon*, or the time elapsed since the preceding new moon, to tenths of a day.

Pages V. to XII., inclusive, contain the *Moon's Right Ascension* and *Declination* for each day and hour of Greenwich mean time. They are accompanied with columns of *differences for one minute*, which are also given at each hour. The right ascension and declination of the moon change so rapidly, that, if they were not given at frequent intervals, the moon would cease to be useful to the practical navigator as a means of determining the latitude and time. The Greenwich mean time, which is required for taking out these quantities, may be taken from a well-regulated chronometer, or obtained by applying the longitude, turned into time, to the local mean time of the observer. The right ascension, or declination, is taken out for the day and hour of the Greenwich mean time; the *diff. for 1^m* multiplied by the *minutes* and parts of a minute of the Greenwich time; and the product added to, or subtracted from, the quantity, according as the quantity is increasing or decreasing.

Thus, suppose the moon's right ascension and declination are required for 1881, June 7, 2^h 15^m 20^s, astronomical mean time at Greenwich :

	<i>Right Ascension.</i>	<i>Declination.</i>
June 7, 2 ^h	12 ^h 49 ^m 28 ^s .72	10° 25' 14".4 S.
Diff. 2°.0686 × 15.333	= + 31.72	— 11".434 × 15.333 = 2 55.3 S.
June 7, 2 ^h 15 ^m 20 ^s	12 50 04.44	10 28 9.7 S.

The differences interpolated for 7^m.67 = 0^h.13 are for the right ascension 2°.0693, and for the declination 11".429, which may be used for greater precision.

Page XII. contains also the *Phases of the Moon* and the dates of the *Moon's Perigee and Apogee*, or least and greatest distances from the earth.

Pages XIII. to XVIII., inclusive, contain the *Lunar Distances*, or the angular distances of the centre of the moon from the centre of the sun, the four larger planets, and certain fixed stars, as they would appear to an observer at the centre of the earth. They are given for every third hour of Greenwich mean time, beginning at noon; the dates are therefore *astronomical*. All the distances that can be observed on the same day are grouped together under that date; and the columns are read from left to right, across both pages of the same opening. The letter W., or E., is affixed to the name of the sun, planet, or star, to indicate that it is on the west, or east, side of the moon.

An observer on the earth's surface having measured a *Lunar Distance*, corrected it for errors of his instrument and for the semidiameter of the objects, and cleared it from the effects of refraction and parallax, finds the *true*, or *geocentric*, distance, that is, the distance as it would have appeared from the centre of the earth at the moment of observation. With this distance and the distances in the Ephemeris of the same bodies on the same day, the *Greenwich mean time* of the observation can be found.

To lessen the labor of computation, there is given in the Ephemeris, between every two successive distances, the *logarithm of the seconds of time in which the distance changes 1"*, or, as it is usually called, the *proportional logarithm of the difference*. It is given for the *middle instant* of the two hours between which it is placed.

For computing the *Greenwich time* we have the following rule :

Find in the Almanac the two distances between which the true distance falls; take out the nearest of these, the hours of Greenwich time over it, and the *P. L. of Diff.* between them.

Find the difference between the true distance and the distance taken from the Almanac; and from the *proportional logarithm* of this difference, as found in the Navigator, subtract the *P. L. of Diff.* taken from the Almanac.

The result is the *proportional logarithm* of an interval of time to be *added* to the hours of Greenwich time, taken from the Almanac, when the *earlier* Almanac distance is used; to be *subtracted* from the hours of Greenwich time, when the *later* Almanac distance is used.

Another method is, to *add* the *common logarithm* of the difference of the true and the Almanac distances to the *P. L. of Diff.* of the Almanac; the sum will be the *common logarithm* of the correction to be applied to the hours of Greenwich time. The Table of *Logarithms of small Arcs in Space or Time*, given at the end of the volume for 1871, saves the operation of reducing degrees (or hours) and minutes to seconds, and the reverse.

As the *P. L. of Diff.* in the Ephemeris varies, the Greenwich time, found by the methods just described, may not be sufficiently exact. To correct it for such variation, or *2d difference*, take the difference between the *P. L. of Diff.* used and the one which follows it in the Ephemeris, (or, more strictly, half the difference of the preceding and following ones.) With this difference, and the first correction of the Greenwich time already found, enter Table I. Appendix, and take out the corresponding seconds, which are to be *added* to the approximate Greenwich time if the *Prop. Logs.* in the Ephemeris are *decreasing*; to be *subtracted* if they are *increasing*.

Thus the *Greenwich mean time* of the observation can be obtained. If the observer has noted the time of observation by a chronometer, the difference of this chronometer time and the Greenwich mean time will be the *error* of the chronometer or Greenwich time as found from the Lunar Distance. The agreement or disagreement of this error with that brought up from the error and rate of a previous date, may show whether the chronometer has run well or ill. In this way Lunar Distances can be used as a check upon the chronometer. By a series of carefully observed Lunar Distances on both sides of the moon, the chronometer error can be tolerably well ascertained.

If the observer has found the *local mean time* of observation from the observed altitude of one of the bodies, or by a watch regulated to that time by recent observations and corrected for change of longitude in the interval, the difference of this local time and the Greenwich time found from the Lunar Distance will be his longitude.

As an example of finding the Greenwich mean time from a Lunar Distance, suppose that in 1881, June 10, about 17^h of Greenwich mean time, the corrected distance of the moon's centre from α Aquilæ is 60° 35' 42'' :

Corrected distance,	60° 35' 42''	
Distance in the Ephemeris, June 10, 15 ^h 0 ^m 0 ^s	61 22 4	P. L. 2786
Difference,	46 22	P. L. 5891
Time from 15 ^h (after)	+ 1 28 4	P. L. 3105
Corr. for 2d Diff., Table I,	— 3	
Greenwich Mean Time, June 10,	16 28 1	

By a Table of common logarithms, or a Table of logarithms of small arcs, the reduction of the Greenwich time would be found thus :

From Ephemeris,	P. L. 0.2786
Diff. of distances, 46' 22'' = 2782''	log 3.4444
Red. of Greenwich time, + 1 ^h 28 ^m 4 ^s = 5284 ^s	log 3.7230

the result being the same as by the previous method.

Pages 218 to 241, inclusive, contain the ephemerides of the four principal planets, Venus, Mars, Jupiter, and Saturn. The ephemeris of each consists of its *Apparent Right Ascension* and *Declination* and their *Variations in one hour*, for each Greenwich mean noon; *Mean Time of its Meridian Passage*; and, at the bottom of the page, its *Semidiameter* and *Horizontal Parallax*.

North declinations are marked +, south declinations —. + prefixed to the change of declination of the sun, moon, a planet, or a star, indicates that north declinations are increasing, or south declinations are decreasing; — indicates that north declinations are decreasing, south declinations increasing.

The right ascension and declination of a planet are required in all observations of it for time, latitude, or azimuth. The mode of reducing them to any instant of Greenwich mean time is the same as in the examples of the sun previously given. The mean time of passage across any meridian can be found by dividing the *daily* difference by 24, and using the *hourly* difference thus obtained, as in the case of the moon; or, the reduction can be found by the proportion: As 24^h (or 360°) is to the longitude, so is the daily difference to the reduction required.

THE ASTRONOMICAL PART.

This part is adapted to the meridian of Washington; and Washington time, *astronomical* or *sidereal*, is required in its use. The longitude of Washington from Greenwich is assumed to be $+5^h 8^m 12^s$.

Obliquity of the Ecliptic, &c., page 248.—This page contains for every tenth day of the year the *Apparent Obliquity*, which is required for the transformation of longitudes and latitudes to right ascensions and declinations, or the reverse; the *Equation of Equinoxes* in longitude and right ascension, commonly called Nutation, or the reduction which is to be applied to a longitude counted from the *mean* equinox of the date in order to obtain the longitude from the *true* equinox of the date; the *Precession of Equinoxes* in longitude, or the reduction of longitudes from the mean equinox of January 1 to the mean equinox of the *date*; the *Sun's Aberration*, which is to be applied to the *true* longitude of the sun, as given in the Ephemeris, to obtain its *apparent* longitude; the *SUN's Equatorial Horizontal Parallax*; and the *Mean Longitude of the Moon's Ascending Node*.

At the bottom of the page are given the *Mean Obliquity* for the beginning of the year; the *Annual Precession* for the middle of the year, the precession in a sidereal and in a solar day, and the *daily motion* of the moon's node in longitude.

Fixed Stars.—Pages 249–257 contain for each mean midnight the logarithms of *A, B, C, D*, also *f, G, H, i*, and logarithms of *g, h, and i*, (following BESSEL's notation,) for reducing the *mean* places of the Fixed Stars at the beginning of the year to their *apparent* places on any day.

The formulæ by which they are prepared, and those employed in their use, are given on page 258. The coefficients are those of PETERS and STRUVE. The terms relating to right ascension are expressed in time.

The first set of quantities requires for the star the logarithms of *a, b, c, d, a', b', c', d'*, which are to be found in some Star Catalogues. The other set requires no other star constants than the right ascensions and declinations. *f, G, and H* are given in time, as well as arc, to facilitate their use with tables of sines, &c., which have the argument in time.

For a star near the pole, it is best to compute the reductions with the mean right ascension and declination at the date instead of the beginning of the year, (or the logarithms of *a, b, c, &c.*, reduced to the date), and add such of the following terms as may be of sufficient magnitude:

In Right Ascension.	In Declination.
$+ 0^s.000003 \tau^2 \sin \alpha \} \tan \delta$	$+ 0''.000975 \tau^2 \sin^2 \alpha$
$- 0^s.000149 \tau^2 \cos \alpha \}$	$- 0''.000023 \cos 2 \Omega$
$- 0^s.0000650 \tau^2 \sin 2 \alpha \}$	$- 0''.000080 \cos 2 \Omega \cos 2 \alpha$
$+ 0^s.0000103 \sin 2 \Omega \cos 2 \alpha \}$	$- 0''.000077 \sin 2 \Omega \sin 2 \alpha$
$- 0^s.0000107 \cos 2 \Omega \sin 2 \alpha \}$	$+ 0''.000040 \cos 2 \Omega$
$+ 0^s.0000620 \sin 2 \odot \cos 2 \alpha \}$	$- 0''.000467 \cos 2 \odot \cos 2 \alpha$
$- 0^s.0000622 \cos 2 \odot \sin 2 \alpha \}$	$- 0''.000465 \sin 2 \odot \sin 2 \alpha$
$+ 0^s.0000513 \sin (\odot + \Omega) \cos 2 \alpha \}$	$- 0''.000004 \cos (\odot + \Omega)$
$- 0^s.0000507 \cos (\odot + \Omega) \sin 2 \alpha \}$	$- 0''.00038 \cos (\odot + \Omega) \cos 2 \alpha$
$+ 0^s.0000097 \sin (\odot - \Omega) \cos 2 \alpha \}$	$- 0''.00038 \sin (\odot + \Omega) \sin 2 \alpha$
$- 0^s.0000053 \cos (\odot - \Omega) \sin 2 \alpha \}$	$- 0''.00038 \cos (\odot - \Omega) \cos 2 \alpha$
	$- 0''.00004 \cos (\odot - \Omega) \sin 2 \alpha$
	$- 0''.00007 \sin (\odot - \Omega) \sin 2 \alpha$

} $\tan \delta$

} $\sin \delta \tan \delta$

Pages 259–262 contain the *mean places* and *annual variations* of 208 Fixed Stars for 1881, Jan. 0^d—500, or 1860, Dec. 30.500, the instant when the sun's mean longitude is 280°. τ on the preceding pages is reckoned from the same epoch.

The *apparent* places of α , δ , and λ Ursæ Minoris, and of 51 Cephei, are given on pages 263–274 for every upper transit at Washington. They include the terms depending on $2 \odot$ and $\odot - \Gamma'$, as well as other small terms given above and on page 258, so far as they were of sufficient importance.

Moon-Culminating Stars, pages 335–338.—The *mean* places, with their annual variations, of 218 stars near the moon's path are given for the beginning of the fictitious year (1880, Dec. 30.500). The names of those whose *apparent* places are given in the Ephemeris of the *Fixed Stars* are printed in SMALL CAPITALS, and the reductions from *mean* to *apparent* places for those which will be occulted by the moon during the year, may be found in the pages of Occultations.

The *apparent* places of the others may be obtained by the quantities and formulæ on pages 249–258.

1881.—EXAMPLE.

Computation of the apparent place of μ Geminorum, (a star proper to be observed with the moon on January 13.)

The Washington mean time of transit at Paramatta is January 13, 19^h 32^m (6^m after that of the moon) or 04.31 after midnight of January 13. The quantities from page 249 or page 252 are to be taken out for this time.

FIRST METHOD.

(Star Tables)	log a	0.559	log b	7.281 π	log c	7.696 π	log d	8.857
(p. 249)	log A	9.603	log B	9.978	log C	0.892 π	log D	1.269
(Star Tables)	log a'	0.150 π	log b'	9.999 π	log c'	8.248	log d'	8.432 π
	log Aa	0.162	log Bb	7.259 π	log Cc	8.588	log Dd	0.126
	log Aa'	9.753 π	log Bb'	9.977 π	log Cc'	9.140 π	log Dd'	9.701 π
Mean place,	α	6 ^h 15 ^m 45.690			δ	+ 22° 34' 23.02"		
	Aa	+ 1.452			Aa'	— .57		
	Bb	— .002			Bb'	— .95		
	Cc	+ .039			Cc'	— .14		
	Dd	+ 1.337			Dd'	— .50		
	E	+ .004			$\tau \mu'$	.00		
	$\tau \mu$	.000						
Apparent Place,	α'	6 15 48.52			δ'	+ 22 34 20.9		

SECOND METHOD.

α	6 ^h 15 ^m 45.690			δ	+ 22° 34' 23.02"
G	0 27.0			$G + \alpha$	6 ^h 42.8
H	22 28.9			$H + \alpha$	4 44.7
log $\frac{1}{\tau}$	8.824	log $\frac{1}{\tau}$	8.824	α	6 ^h 15 ^m 45.690
log g	0.909	log h	1.305	f	+ 1.236
log sin ($G + \alpha$)	9.992	log sin ($H + \alpha$)	9.976	(g)	+ .221
log tan δ	9.619	log sec δ	0.035	(h)	+ 1.380
log (g)	9.344	log (h)	0.140	$\tau \mu$	.000
				Apparent Right Ascension . . .	$\alpha' = 6 15 48.53$
log g	0.909	log h	1.305		
log cos ($G + \alpha$)	9.269 π	log cos ($H + \alpha$)	9.509	δ	+ 22° 34' 23.02"
log (g')	0.178 π	log sin δ	9.584	(g')	— 1.51
		log (h')	0.398	(h')	+ 2.50
log i	0.529 π			(i)	— 3.12
log cos δ	9.965			$\tau \mu'$	.00
log (i)	0.494 π	Apparent Declination . . .	$\delta' = + 22 34 20.9$		

The Moon's *Semidiameter* and *Equatorial Horizontal Parallax* for each mean noon and midnight are on pages 339–342.* In the moon's ephemeris, as in that of the sun, the hourly motions belong to the instants for which they are given. The hourly change of semidiameter is equal to $0.2723 \times$ that of the horizontal parallax.

*For eclipses and occultations BURCKHARDT's value of the semidiameter, which is 2'.5 less, is preferred.

The times of the *Moon's Phases, Apogee, Perigee, and greatest Libration*, are given on page 343; the position of the *Moon's Equator* and the *Moon's mean longitude* on page 344; and a Table for computing the *Libration* of the Moon on page 345.

The *Ephemerides of the seven principal Planets* (pages 346–387) are given both for *mean noon* and the time of *transit*. The *hourly differences* are also given for the same instants.

The *Horizontal Parallaxes, Vertical Semidiameters, and Sidereal Times of the Semidiameters passing the Meridian*, are on pages 388 and 389.

The *Sun's Coördinates* (pages 390–401) are given for each mean noon and midnight, referred to the apparent equinox and equator, and also to the mean equinox and equator at the beginning of the year, (Jan. 0^d.0.) In the case of the rectangular coördinates, only the last four decimals are given for the mean equinox and equator, and the first three places are to be taken from the apparent equinox and equator. When a change of a unit is to be made in the third place, it is indicated by a corresponding colon (:). The latitude is referred to the ecliptic of the date. The reduction to the mean ecliptic of Jan. 0, is $+0''.468 \tau \sin (\odot + 187^\circ)$, in which τ is the time from Jan. 0, in parts of a year.

The *Heliocentric Coördinates* of the Planets (pages 402–408) are referred to the mean equinox and ecliptic of the mean noon of the 2405,000th day of the Julian Period, or 1872, July 25.

The columns — $\frac{k^2}{r^2} x$, &c., contain the quantities — $1600 m \frac{k^2}{r^2} x$, — $1600 m \frac{k^2}{r^2} y$, — $1600 m \frac{k^2}{r^2} z$, in units of the 7th decimal place, in which m denotes the mass of the planet, and k^2 the unit of attractive force in the solar system, or $\log k = 8.2355814$.

Page 409 contains the *Inclinations, and Longitudes of the Ascending Nodes* at the same epoch, and the *Masses* of the several Planets, with their logarithms. The changes of the Inclinations and Nodes in 100 days are also given.

The Heliocentric Coördinates and Masses of the Planets are given for the computation of perturbations.

Eclipses.—Pages 410–415 contain the elements necessary for computation, and the principal phases of each eclipse of the SUN and MOON. The semidiameters of the moon are $2''.5$, and those of the sun $2''.2$, less than those in the Ephemeris.

The charts of the *Solar Eclipses* show the part of the world in which each is visible. The dotted curves pass through places where the eclipse begins, or ends, at an exact hour of Washington mean time, and aid in finding an approximate time of the beginning, or end, at any place. The limits and central line will give some idea of the magnitude of the eclipse. The longitudes are reckoned west from Washington.

The Tables of *Data of the Solar Eclipses* contain certain quantities* derived from the elements and independent of the place of observation. They are given for each tenth minute of Washington mean time; and if their values for the *Penumbra* be taken out for a time T_0 , assumed near that of the beginning, or end, of the eclipse at any place, the prediction for that place may be computed quite accurately by the following formulæ:

$$\begin{aligned} \text{Let } \varphi &= \text{the latitude of the place, } + \text{ when north,} \\ \lambda &= \text{its longitude from Washington, } + \text{ when west,} \\ (\text{Bessel}) \quad \log c &= 8.912205, \quad \log (1 - e^2) = 9.9970916, \quad \sin \chi = e \sin \varphi, \\ h &= \sec \chi \cos \varphi, \quad k = (1 - e^2) \sec \chi \sin \varphi, \\ a &= A - h \sin (\mu - \lambda), \\ b &= B - E k + G h \cos (\mu - \lambda), \\ c &= -C + F k - H h \cos (\mu - \lambda), \\ m &= \sqrt{b c} \quad (\text{usually with same sign as } a). \end{aligned}$$

*The formulæ are given in CHAUVENET'S *Spherical and Practical Astronomy*, Vol. I, page 513. The changes of A , B , and C for one minute, or one second, are expressed in units of the sixth decimal place.

If $m = a$, the time T_0 is correctly chosen. If m differ from a , a correction t of the assumed time may be obtained in seconds by the formulæ,

$$\begin{aligned} \log \mu' &= 1.86167, & a' &= A' - \mu' h \cos (\mu - \lambda), \\ \tan \frac{1}{2} Q &= \frac{c}{m} = \frac{m}{b}, & b' &= B' - \mu' G h \sin (\mu - \lambda), \end{aligned}$$

$$t = \frac{1000000 (m - a)}{a' + b' \cot Q}$$

and a new approximation to the actual Washington time will be

$$T_0' = T_0 + t,$$

with which the computation may be revised.

Thus successive approximations are made until for the last assumed time T_0 , $m = a$ very closely, and t is quite small. The local mean time of the phenomenon will be, using the last values of T_0 and t ,

$$T_0 + t - \lambda.$$

Q must be taken of the same sign with a , and is a sufficiently near approximation to the angular distance of the point of contact reckoned from the *north* point of the sun's limb, + towards the *east*.

For a total or annular eclipse, the prediction of the interior contacts may be made in the same way, using the *Data* for the *Shadow*; except that Q will have a sign opposite that of a in a total eclipse.

To find V , the angular distance of the point of contact from the *Vertex* of the sun's limb, + towards the *left*, we have the formulæ

$$\begin{aligned} p \sin P &= \sin \varphi & c \sin C &= \cos P \tan (\mu - \lambda) \\ p \cos P &= \cos \varphi \cos (\mu - \lambda) & c \cos C &= \sin (P - \delta') \\ V &= Q - C, \end{aligned}$$

in which δ' is the sun's declination.

If the values of Q at the beginning and at the end of the eclipse be found, and their difference (with regard to signs) be denoted by 2θ , the number of digits eclipsed is

$$12(1+n) \sin^2 \frac{1}{2} \theta, \quad \text{or } 12(1+n) \cos^2 \frac{1}{2} \theta,$$

according as θ is acute or obtuse; n being the quotient of the semidiameter of the moon divided by that of the sun.

θ may also be found from the formulæ:

$$\tan R = \frac{b'}{a'} \quad \theta = Q + R$$

(in which R has the sign of b'); and the expression of t may be changed to

$$t = 1000000 \cdot \frac{m - a}{a'} \cdot \frac{\sin Q \cos R}{\sin \theta}.$$

The following is an example of the computation of the beginning of the Eclipse of May 27, 1881, for the Observatory at Chicago, for which

$$\varphi = +41^\circ 50' 1''.0$$

$$\lambda = 10^\circ 33' 33''.9$$

$$(1) \quad \log e = 8.912205$$

$$(2) \quad \text{l. sin } \varphi = 9.8241061$$

$$(3) \quad \log (1 - e^2) = 9.9970916$$

$$(4) \quad \text{l. sec } \chi = 0.0006457$$

$$(5) \quad \text{l. cos } \varphi = 9.8722057$$

$$(1) + (2) \quad \text{l. sin } \chi = 8.736311$$

$$(2) + (3) + (4) \quad \log k = 9.8218434$$

$$(4) + (5) \quad \log h = 9.8728514$$

By the chart the Washington mean time of the beginning of the eclipse at Chicago is $7^h 40^m$, for which we take from the table for *Penumbra*, on page 410, the values of A , B , C , &c.

Computation of t , the correction of T_0 .

	$\mu = 115^\circ 45' 21''$	(9)	$\log E = 9.969601$
	$\mu - \lambda = 105^\circ 11' 47.2$	(10)	$\log k = 9.821843$
(1)	$\log \sin(\mu - \lambda)$	(11)	$\log F = 9.968026$
(2)	$\log k$	(9) + (10)	$\log Ek = 9.791444$
(3)	$\log \cos(\mu - \lambda)$	(10) + (11)	$\log Fk = 9.789669$
		(12)	$A = +0.43409$
(4) = (1) + (2)	$\log k \sin(\mu - \lambda)$	(13)	$-k \sin(\mu - \lambda) = -0.72010$
(5)	$\log \mu'$		
(6)	$\log G$	(14)	$B = +1.72829$
(7) = (2) + (3)	$\log k \cos(\mu - \lambda)$	(15)	$-Ek = -0.61865$
(8)	$\log H$	(16)	$Gk \cos(\mu - \lambda) = -0.07070$
(6) + (7)	$\log Gk \cos(\mu - \lambda)$	(17)	$-C = -0.60964$
(7) + (8)	$\log Hk \cos(\mu - \lambda)$	(18)	$Fk = +0.61641$
		(19)	$-Hk \cos(\mu - \lambda) = +0.07238$
(5) + (7)	$\log \mu' k \cos(\mu - \lambda)$	(12) + (13)	$a = -0.26501$
(4) + (5) + (6)	$\log \mu' Gk \sin(\mu - \lambda)$	(14) + (15) + (16)	$b = +1.03804$
		(17) + (18) + (19)	$c = +0.07915$
(20)	$\log b = 0.016591$		$m = -0.28676$
(21)	$\log c = 8.898451$		$m - a = -0.00075$
(22) = $\frac{1}{2}[(20) + (21)]$	$\log m = 9.457521$		
(22) - (20) = (21) - (22)	$\log \tan \frac{1}{2} Q = 9.440930$		
Angle from N. point,	$Q = -30^\circ 51'.6$	(23)	$A' = +144.12$
(29)	$\log \cot Q = 0.22364$	(24)	$-\mu' k \cos(\mu - \lambda) = +14.19$
(30)	$\log b' = 0.93349$	(25)	$B' = +10.35$
(29) + (30)	$\log b' \cot Q = 1.15713$	(26)	$-\mu' Gk \sin(\mu - \lambda) = -18.93$
(31)	$\log(m - a) + 6 = 2.8751$	(25) + (26)	$b' = -8.58$
(32)	$\log(a' + b' \cot Q) = 2.2372$	(27) = (23) + (24)	$a' = +158.31$
(31) - (32)	$\log t = 0.6379$	(28)	$b' \cot Q = +14.36$
		(27) + (28)	$a' + b' \cot Q = +172.67$

Assumed time $T_0 = 7^h 40^m 0.0$

Correction of the assumed time $t = -4.3$

Washington time of beginning May 27, 7 39 55.7

Local time of beginning May 27, 6 57 41.4

We have also $C = 46^\circ 5'$, and the angle from the Vertex, $V = -76^\circ 57'$.

Occultations.—Pages 416–453 contain *Elements for facilitating the Prediction of Occultations of Planets and Stars by the Moon*. The list includes all stars to the $6\frac{1}{2}$ magnitude in the principal catalogues, and a few others of less magnitude contained in the *Almanac Catalogue of Zodiacal Stars* and chiefly belonging to clusters which can be occulted during the year.

The mean places of many of these stars for the beginning of the year are given on pages 335–338. The reductions to *apparent* place are given for each date of occultation.

Pages 454–456 contain a list of such occultations and near approaches as will be visible at Washington during the year 1881. For the latter, the time of nearest approach, the nearest point of the moon's limb, and the distance of the star from the moon's limb are stated.

The elements comprise the *Date, the Name, Magnitude and Declination of the Star*, the *Limiting Latitudes* within which the occultation may be visible, and at the time of geocentric conjunction of the moon and star in right ascension the following quantities:

δ = Washington mean time,

H = Hour angle of the star at Washington, + when west;

$$X = \frac{15(\alpha - \alpha')}{\pi} \cos \delta = 0, \quad Y = \frac{\delta - \delta'}{\pi},$$

$$x' = \frac{15 \Delta \alpha}{\pi} \cos \delta, \quad y' = \frac{\Delta \delta}{\pi}, \text{ the hourly changes of } x \text{ and } y;$$

in which α and δ are the apparent right ascension and declination of the moon,

$\Delta \alpha$ and $\Delta \delta$, their motions in one hour of mean time,

π , the moon's equatorial horizontal parallax,

α' and δ' , the apparent right ascension and declination of the star.

The reductions of the mean place of the star at the beginning of the year to its apparent place at the date, are also given to facilitate the reduction of observed occultations.

For any other Washington mean time, $T = \zeta + t$, we have (μ being the sidereal equivalent of t , and t as a coefficient being expressed in hours)

$$h = H + \mu, \text{ the star's hour angle at Washington,}$$

$$x = t x', \quad y = Y + t y'.$$

As the moon's motion is here regarded as uniform, the expressions for x and y are more nearly correct the smaller the interval t . The exact values, to be employed in the reduction of an observed occultation, are

$$x = \frac{\sin (\alpha - \alpha') \cos \delta}{\sin \pi}$$

$$y = \frac{\sin (\delta - \delta') \cos^2 \frac{1}{2} (\alpha - \alpha') + \sin (\delta + \delta') \sin^2 \frac{1}{2} (\alpha - \alpha')}{\sin \pi}$$

in which α , δ and π are to be taken from the ephemeris for the time of observation. But for predicting the times of *immersion* and *emersion*, and the points on the moon's limb where these appearances take place, the preceding expressions suffice to enable the observer to determine when and where to watch for these phenomena.

For the place of observation, let

φ = its latitude, + when north ;

λ = its longitude from Washington, + when west ;

$$(\text{Bessel}) \quad \log e = 8.912205, \quad \log (1 - e^2) = 9.9970916,$$

$$\sin \chi = e \sin \varphi, \quad E = (1 - e^2) \sec \chi, \quad F = \sec \chi.$$

$$\mu' = 54147.8 \sin 1'', \quad \log \mu' = 9.41916.$$

The constants for the place, required both in the prediction of occultations and the reduction of those observed, are φ , λ , and $E \sin \varphi$, $F \cos \varphi$, $\mu' F \cos \varphi$, or their logarithms.

The values of E and F and their logarithms are given for different latitudes in the following table :

φ	E .	F .	Log E .	Log F .
0°	1—.0067	1.0000	9.9971	0.0000
± 10	1—.0066	1.0000	9.9971	0.0000
20	1—.0063	1.0004	9.9973	0.0002
30	1—.0059	1.0008	9.9975	0.0004
40	1—.0053	1.0014	9.9977	0.0006
50	1—.0047	1.0020	9.9979	0.0009
60	1—.0042	1.0025	9.9982	0.0011
70	1—.0037	1.0030	9.9984	0.0013
80	1—.0034	1.0033	9.9985	0.0014
90	1—.0033	1.0034	9.9985	0.0014

An occultation will not be visible unless,

1. The latitude of the place is included within the limiting parallels ;
2. At the time of occultation, or the local mean time ($T - \lambda$), the sun is sufficiently below the horizon ;

3. At that time the star is above the horizon, or its local hour angle ($h-\lambda$) is numerically less than τ found by the formula

$$\cos \tau = -\tan \varphi \tan \delta'.$$

A table of τ , or the hour angle of a body in the horizon, computed for the latitude of the place and different declinations, will be useful for such comparisons.

These conditions can generally be determined in advance, as in latitudes less than 60° ($\delta-\lambda$) may be used instead of ($T-\lambda$) except within two hours of sunrise or sunset; and ($H-\lambda$) instead of ($h-\lambda$) except within half an hour of the star's rising or setting. For these exceptional cases, which, however, are not favorable for observation, the time of *apparent* conjunction in right ascension, or some nearer approximation to the time of occultation, can be subsequently employed.

Having ascertained that an occultation will be visible, we may proceed to compute the times of immersion and emersion by the following formulæ:

1. To find approximately the time* of *apparent* conjunction in right ascension, as affected by parallax;

$$u = F \cos \varphi \sin (H-\lambda)$$

$$u' = \mu' F \cos \varphi \cos (H-\lambda)$$

In hours,

$$(t) = \frac{u}{x' - u'}$$

Washington time of *apparent* conjunction, (T) = $\delta + (t)$

Local " " " " (T) - λ

The value of (T) to the nearest tenth of an hour is sufficiently accurate. If a closer approximation is desired, the computation may be repeated, using $h = H + (\mu)$ instead of H , (μ) being the sidereal equivalent of (t),

$$x = (t) x' \quad (t') = -\frac{x-u}{x'-u'} \quad (T') = (T) + (t').$$

2. To find a nearer approach to the time of either phase, let us assume the Washington mean time T , which for the first computation may be the computed time of *apparent* conjunction, or some conjectural time near it later, if $H-\lambda$ is west, or +, earlier if $H-\lambda$ is east, or -. For this time find

$$t = T - \delta$$

$$h = H + \mu, \text{ or } h - \lambda = H - \lambda + \mu$$

$$x = t x'$$

$$y = Y + t y',$$

and then T_1 and T_2 , the approximate Washington mean times of immersion and emersion, by the following formulæ. The local mean times will be found by subtracting from T_1 and T_2 the longitude of the place.

$$A \sin B = E \sin \varphi$$

$$u = F \cos \varphi \sin (h-\lambda)$$

$$u' = \mu' A \cos B$$

$$A \cos B = F \cos \varphi \cos (h-\lambda)^\dagger$$

$$v = A \sin (B - \delta')$$

$$v' = \mu' u \sin \delta'$$

[or, with other auxiliaries than A and B ,

$$b = F \cos \varphi \cos (h-\lambda)$$

$$u' = b \mu'$$

$$v' = E \sin \varphi \cos \delta' - b \sin \delta']$$

$$m \sin M = x - u$$

$$n \sin N = x' - u'$$

$$m \cos M = y - v$$

$$n \cos N = y' - v'$$

(Burckhardt)

$$k = 27227$$

$$\log k = 9.43500$$

$$\cos \phi = \frac{m \sin (M - N)}{k}$$

$$\phi < 180^\circ$$

* It is convenient, but not necessary, to have this time.

† If ($h-\lambda$) be restricted to values numerically less than 12° , or 180° , B may be taken in the same quadrant with ($h-\lambda$), and have the same sign as the latitude. For a place where many occultations are observed, tables of A , B , u and u' for different values of ($h-\lambda$), or of $E \sin \varphi \cos \delta'$ for different declinations, would be convenient.

	For Immersion.	For Emersion.
In hours,	$t_1 = -\frac{m \cos (M-N)}{n} - \frac{k \sin \phi}{n}$	$t_2 = -\frac{m \cos (M-N)}{n} + \frac{k \sin \phi}{n}$
Washington mean time,	$T_1 = T + t_1$	$T_2 = T + t_2$
Local " "	$T_1 - \lambda$	$T_2 - \lambda$

3. Assuming now $T_1 = \phi + t + t_1$ for the immersion, or $T_2 = \phi + t + t_2$ for the emersion, as the Washington time instead of T , and recomputing, we can obtain nearer approximation to the times of these phenomena. But the first operation will give the times usually within one or two minutes, which is sufficiently accurate for watching for an immersion. For an emersion a more accurate knowledge is desirable. But for this purpose it will often be sufficient to substitute $(h_2 - \lambda) = (h - \lambda + \frac{1}{2} \mu_2)$ for $(h - \lambda)$ in the computation of u' and v' , and, using the same m and M as before, recompute n , N , ϕ and t_2 , a new correction to be added to T .

If $\log. m \sin (M-N) = 9.4350$ nearly, a recalculation will generally be necessary to determine whether, numerically, $\cos \phi < 1$, or $\cos \phi > 1$. In the latter case the impossible value of $\cos \phi$ indicates that an occultation at the given place is impossible, unless the computed distance from the moon's limb is within the errors of the ephemeris of the moon and star.

In such cases of near approach to the moon's limb, we may take $\phi = 0^\circ$, or 180° , according as $m \sin (M-N)$ is + or —; and for finding the time of nearest approach,

$$t = -\frac{m \cos (M-N)}{n}$$

The distance from the moon's limb is then

$$\pi [m \sin (M-N) - k],$$

disregarding the sign of $m \sin (M-N)$; or, allowing for the augmentation of the semi-diameter,

$$\pi [m \sin (M-N) - k] [1 + z \sin \pi],$$

where

$$z = A \cos (B - \delta').$$

4. Having found satisfactorily the times of immersion and emersion, and therefore N and ϕ in each case, we have as the angle from the *North point* of the moon's limb, positive towards the *East*,

$$\begin{aligned} Q &= N - 90^\circ + \phi && \text{for an Immersion,} \\ Q &= N - 90^\circ - \phi && \text{for an Emersion;} \end{aligned}$$

and, taking

$$\begin{aligned} c \sin C &= u + t u' \\ c \cos C &= v + t v', \end{aligned}$$

in which the last value of t for the particular phase is properly used, we have as the angle from the *Vertex* of the moon's limb, or that point which is nearest the zenith,

$$V = Q - C$$

also reckoned positive in the same direction as Q , i. e., from North toward East.

5. As a check on the accuracy of the work, we have, using the last computed values of the several quantities,

$$[(x-u) + t(x'-u')]^2 + [(y-v) + t(y'-v')]^2 = k^2 = 0.07413;$$

Or, we may compute u , v , x , and y , with the last determined time of immersion, or of emersion, and we should have for either, as the condition of the phenomenon,

$$(x-u)^2 + (y-v)^2 = k^2 = 0.07413$$

$$\text{or,} \quad \log m = \log k = 9.4350$$

1881.—*Example*.—The times of immersion and emersion, and the angles of position of the points of contact, are required for an occultation of B. A. C. 5335, January 24, 1881, at New Orleans, Louisiana, for which

$$\phi = +29^{\circ} 57'.5$$

$$\lambda = +0^{\text{h}} 51^{\text{m}}.8$$

The data for computation are given on page 418. On looking at the data, we find that ϕ is included between the limiting parallels of latitude, and, subtracting λ from H , that the star must be less than three hours from the meridian at *geocentric* conjunction, and that the sun is below the horizon.

The constants of the place are:

$$\begin{array}{lll} \log \sin \phi = 9.6984 & \log \cos \phi = 9.9377 & \log F \cos \phi = 9.9381 \\ \log E = 9.9975 & \log F = 0.0004 & \log \mu' = 9.4192 \\ (1) \log E \sin \phi = 9.6959 & (2) \log F \cos \phi = 9.9381 & (3) \log \mu' F \cos \phi = 9.3573 \end{array}$$

From page 418, we have for the time of *geocentric* conjunction

$$\begin{array}{lll} \delta & 17^{\text{h}} 43.3^{\text{m}} & Y + .5398 \\ \delta - \lambda & 16^{\text{h}} 51.5 & x' + .5943 \\ H - \lambda & 1^{\text{h}} 56.2 & y' - .0712 \\ H - \lambda & 2^{\text{h}} 48.0 & \log \sin \delta' = 9.5969 \end{array}$$

1. For an approximation to the time of *apparent* conjunction, we have

$$\begin{array}{lll} (2) \log F \cos \phi = 9.938 & (3) \log \mu' F \cos \phi = 9.357 & \\ (4) \log \sin (H - \lambda) = 9.826 \pi & (5) \log \cos (H - \lambda) = 9.871 & x' = + .594 \\ (6) = (2) + (4) \log u = 9.764 \pi & (7) = (3) + (5) \log u' = 9.228 & u' = + .169 \\ (8) \log (x' - u') = 9.628 & & x' - u' = + .425 \\ (6) - (8) \log (t) = 0.136 \pi & & \end{array}$$

$$(t) = -1.37 = -1^{\text{h}} 22.2^{\text{m}}$$

$$\delta = 17^{\text{h}} 43.3^{\text{m}}$$

Washington mean time

$$\delta + (t) = 16^{\text{h}} 21.1^{\text{m}}$$

2. Assuming this time, for which $t = (t) = -1^{\text{h}} 22.2^{\text{m}}$, we proceed as follows to find the times of immersion and emersion and the angles of position of the points of contact.

$$\begin{array}{lll} (9) t = -1^{\text{h}} 22.2^{\text{m}} & \mu = -1^{\text{h}} 22.4^{\text{m}} & (27) x = +.5943 \\ (10) H - \lambda = -2^{\text{h}} 48.0 & & (28) u' = +.1047 \\ (9) + (10) k - \lambda = -4^{\text{h}} 10.4 & & (29) y' = -.0712 \\ & & (30) v' = +.0799 \\ (11) \log \sin (k - \lambda) = 9.9483 \pi & & (27) - (28) \pi \sin N = +.4896 \\ (12) = (2) \log F \cos \phi = 9.9381 & & (29) - (30) \pi \cos N = -.1511 \\ (13) \log \cos (k - \lambda) = 9.6629 & & (31) \log m \sin M = 8.6493 \pi \\ & & (32) \log m \cos M = 8.3729 \pi \quad M = 297^{\circ} 53' \\ (14) \log \sin \delta' = 9.5969 \pi & & (33) \log \tan M = 0.2764 \pi \\ (11) + (12) \log u = 9.8864 \pi & & (34) \log \cos M = 9.6699 \pi \\ (15) \log u' = 9.4192 & & \log v' = 8.9025 \\ (16) = (12) + (13) \log A \cos B = 9.6010 & & \log u' = 9.0202 \\ (17) = (1) \log A \sin B = 9.6959 & & B = +51^{\circ} 13' \\ (16) - (17) \log \cotan B = 9.9051 & & \delta' = -23^{\circ} 17' \\ (18) \log \sin B = 9.8918 & & B - \delta' = +74^{\circ} 30' \\ (19) = (17) - (18) \log A = 9.8041 & & (35) \log n \sin N = 9.6898 \\ & & (36) \log n \cos N = 9.1793 \pi \\ & & (37) \log \cotan N = 9.4895 \pi \quad N = 107^{\circ} 9' \\ & & (38) \log \sin N = 9.9803 \pi \quad M - N = 190^{\circ} 44' \\ (20) \log \sin (B - \delta') = 9.9839 & & (39) = (32) - (34) \log m = 8.7030 \\ & & (39) \log m = 8.7030 \\ (19) + (20) \log v = 9.7880 & & (40) \text{Constant, } \log \frac{1}{k} = 0.5650 \\ & & (42) = (38) - (35) \log \frac{1}{n} = 0.2905 \\ (21) t x' = -1.37 \times .5943 \quad x = -.8144 & & (41) \log \sin (M - N) = 9.2701 \pi \\ & & (43) \log \cos (M - N) = 9.9923 \pi \\ (22) u = -.7698 & & (39) + (40) + (41) 1. \cos \psi = 8.5381 \pi \\ & & (44) 1. \frac{m}{n} \cos (M - N) = 8.9658 \pi \\ (23) Y = +.5398 & & \\ (24) t y' = -1.37 \times -.0712 = +.0975 & & (45) \psi = +91^{\circ} 59' \\ & & (47) \log \sin \psi = 9.9997 \\ (25) = (23) + (24) y = +.6373 & & (42) - (40) \log \frac{k}{n} = 9.7255 \\ (26) v = +.6137 & & \\ (21) - (22) m \sin M = -.0446 & & N - 90^{\circ} + \psi, \text{ at Im. } Q_1 = 109^{\circ} 8' \\ & & (48) \log \frac{k}{n} \sin \psi = 9.7252 \\ (25) - (26) m \cos M = +.0236 & & N - 90^{\circ} - \psi, \text{ at Em. } Q_2 = 285^{\circ} 10' \\ & & (49) - \frac{m}{n} \cos (M - N) = +0^{\text{h}}.097 \\ & & (50) \frac{k}{n} \sin \psi = +0^{\text{h}}.531 \end{array}$$

For *Immersion*.

$$\begin{aligned}
 (51)-(49)-(50) \quad t_1 &= -0.434 \quad = -0.26.0 \\
 \phi + (t) - \lambda &= T \quad = 15.29.3 \\
 \text{Local mean time,} \quad T_1 &= T + t_1 \quad = 15.3.3
 \end{aligned}$$

$$\begin{aligned}
 (51)-(49)-(50) \quad t_2 &= -0.403 \\
 (51) \times (28) &= -.434 \times .105 \quad t_1 u' = -.046 \\
 (22) \quad u &= -.770 \\
 u + t_1 u' \quad c_1 \sin C_1 &= -.816 \\
 (51) \times (30) \quad t_1 v' &= -.035 \\
 (26) \quad v &= +.614 \\
 v + t_1 v' \quad c_1 \cos C_1 &= +.579 \\
 \log c_1 \sin C_1 &= 9.912 \pi \\
 \log c_1 \cos C_1 &= 9.763 \\
 \log \tan C_1 &= 0.149 \pi
 \end{aligned}$$

$$C_1 = 305.4$$

$$\begin{aligned}
 \text{Angle from N. P.,} \quad Q_1 &= 109.1 \\
 \text{Angle from Vertex,} \quad Q_1 - C_1 = V_1 &= 163.7
 \end{aligned}$$

For *Emersion*.

$$\begin{aligned}
 (52)-(49)+(50) \quad t_2 &= +0.628 \quad = +0.37.7 \\
 T &= 15.29.3 \\
 T_2 &= T + t_2 \quad = 16.7.0
 \end{aligned}$$

$$\begin{aligned}
 (52)-(49)+(50) \quad t_2 &= +0.628 \\
 (52) \times (28) &= +.628 \times .105 \quad t_2 u' = +.066 \\
 (22) \quad u &= -.770 \\
 u + t_2 u' \quad c_2 \sin C_2 &= -.704 \\
 (52) \times (30) \quad t_2 v' &= +.050 \\
 (26) \quad v &= +.614 \\
 v + t_2 v' \quad c_2 \cos C_2 &= +.664 \\
 \log c_2 \sin C_2 &= 9.848 \pi \\
 \log c_2 \cos C_2 &= 9.822 \\
 \log \tan C_2 &= 0.026 \pi
 \end{aligned}$$

$$C_2 = 313.3$$

$$\begin{aligned}
 Q_2 &= 285.2 \\
 Q_2 - C_2 = V_2 &= 331.9
 \end{aligned}$$

We have also as a *Check*,

$$[(x-u) + t(x'-u')]^2 + [(y-v) + t(y'-v')]^2 = .0741 \quad .0741$$

3. Assuming now T_1 for the immersion and T_2 for the emersion as corrected values of the local time, T , we can obtain a nearer approximation. Instead, however, of an entire recomputation, a partial revision may be made like the following, for correcting the computed time and the angles of position for the emersion, using the values of M , $\log m$, t_2 , and C_2 from the preceding computation.

$$\begin{aligned}
 (9) \quad \frac{1}{2} t_2 &= +0.18.8 \quad \frac{1}{2} \mu = +0.18.9 \\
 (10) \quad k - \lambda &= -4.10.4 \\
 (9)+(10) \quad k_2 - \lambda &= -3.51.5
 \end{aligned}$$

$$\begin{aligned}
 (11) \quad \log \sin (k_2 - \lambda) &= 9.9278 \pi \\
 (12)-(2) \quad \log F \cos \phi &= 9.9381 \\
 (13) \quad \log \cos (k_2 - \lambda) &= 9.7257
 \end{aligned}$$

$$\begin{aligned}
 (14) \quad \log \sin \delta' &= 9.5969 \pi \\
 (11)+(12) \quad \log u &= 9.8659 \pi \quad \log v' = 8.8820 \\
 (15) \quad \log u' &= 9.4192 \\
 (16)-(12)+(13) \quad \log A \cos B &= 9.6638 \quad \log u' = 9.0830
 \end{aligned}$$

$$\begin{aligned}
 (39) \quad \log m &= 8.7030 \quad (39) \quad \log m = 8.7030 \quad (52)-(49)+(50) \quad t_2 = +.6490 \\
 (40) \quad \log \frac{1}{k} &= 0.5650 \quad (42)-(38)-(35) \quad \log \frac{1}{n} = 0.3047 \quad (53) \quad t_2 \pi \sin N = +.3071 \\
 (41) \quad \log \sin (M-N) &= 9.2640 \pi \quad (43) \quad \log \cos (M-N) = 9.9926 \pi \quad (27) \quad m \sin M = -.0446
 \end{aligned}$$

$$\begin{aligned}
 (39)+(40)+(41) \quad \log \psi &= 8.5320 \pi \quad (44) \quad \log \frac{m}{n} \cos (M-N) = 9.0003 \pi \quad (54)-(27)+(53) \quad = +.2625 \\
 (55) \quad t_2 \pi \cos N &= -.0956 \\
 (28) \quad m \cos M &= +.0236
 \end{aligned}$$

$$\begin{aligned}
 (45) \quad \psi &= 91.57' \\
 (46) \quad N - 90^\circ &= 17.21 \quad (47) \quad \log \sin \psi = 9.9998 \\
 (42)-(40) \quad \log \frac{k}{n} &= 9.7397
 \end{aligned}$$

$$\begin{aligned}
 \text{Angle from North Point,} \quad (46)-(45) \quad Q_2 &= 285.4 \quad (48) \quad \log \frac{k}{n} \sin \psi = 9.7395 \quad [54]^2 = .0680 \\
 [56]^2 &= .0052
 \end{aligned}$$

$$\text{Check, } [54]^2 + [56]^2 = k^2 = +.0741$$

$$\begin{aligned}
 \text{Angle from Vertex,} \quad (49) \quad -\frac{m}{n} \cos (M-N) &= +.1001 \\
 Q_2 - C_2 = 332.1 \quad (50) \quad \frac{k}{n} \sin \psi &= +.5489
 \end{aligned}$$

Local mean time,

$$\begin{aligned}
 t_2 &= +0.6594 = +0.38.9 \\
 T &= 15.29.3 \\
 T &= T + t_2 \quad 16.8.2
 \end{aligned}$$

Jupiter's Satellites, pages 457–477. These pages contain for the several Satellites—

1. The Washington mean times of the occultations, eclipses, transits and transits of shadows, arranged in the order of time. Those visible at Washington, or which occur when the sun is more than 8° below and Jupiter more than 8° above the horizon of that place, are indicated by a *.

2. A diagram for each month, constructed for the eclipse which occurs nearest the middle of the month, showing the phases of the eclipse for an inverting telescope. The stars indicate the points of disappearance and reappearance, distinguished by d and r . The space between them shows the position of the shadow of the planet.

3. Washington mean times of geocentric superior conjunctions, arranged for each satellite separately.

4. The rectangular coördinates x' and y' , for successive times reckoned from the next preceding superior conjunction, computed for a constant major axis and maximum minor axis of the apparent ellipse described by the satellite as seen from the sun at its mean distance from the planet.

5. The *factors* by which x' and y' are to be multiplied to obtain the actual coördinates x and y for the apparent ellipse, as seen from the earth at any date; the inclination p of the minor axis to the circle of declination, reckoned from the *north*, positive towards the *east*; and the actual coördinates x and y at the times of eclipse of each satellite.

The coördinates are referred to the centre of the primary and to the major and minor axes of the ellipse described by the satellite, and are expressed in seconds of arc. x is positive when on the *east* side of the planet; y is positive when *north*. By means of them the configurations of the satellite can be found at any time.

The *Elements of Saturn's Ring*, page 478, give the *apparent* magnitude and position of its several components for each 20 days. The *apparent Discs of Venus and Mars* are given on the same page for each 30 days.

The *Phenomena*, pages 479 and 480, include the times of conjunction, opposition and quadrature, perihelion and aphelion, stationary points and conjunction, with the moon in right ascension of the principal planets.

The *Positions of the Principal Observatories* are given on pages 481 and 482. The list has been considerably enlarged, and the longitudes have been revised. The principal authority for the Continental Observatories of Europe has been the *Astronomisches Jahrbuch* for 1880. The positions of American Observatories have been corrected from the results of the most recent available determinations.

APPENDIX.

CONSTRUCTION OF THE ASTRONOMICAL AND NAUTICAL EPHEMERIDES FOR 1881.

THE Precession of the Equinoxes, the Mean Obliquity of the Ecliptic, and the Constant of Aberration (page 248) are taken from STRUVE and PETERS. They are :

$$\text{Precession}^* = 50''.2411 + 0''.0002268 t,$$

$$\text{Obliquity}^\dagger = 23^\circ 27' 54''.22 - 0''.4645 t - 0''.0000014 t^2,$$

$$\text{Aberration}^\ddagger = 20''.4451 \pm 0''.0111,$$

in which t is the number of years after 1800.

The Nutation of the Apparent Obliquity and the Equation of the Equinoxes are computed from PETERS' formulæ given in his *Numerus Constans Nutationis*, pp. 46–48, and reprinted in the volume of this Ephemeris for 1855. These quantities have been used in all computations relating to the Fixed Stars.

In the Ephemerides of the Sun, Moon, and Planets, the Obliquity of the Ecliptic and the Nutation of HANSEN and OLUFSEN's *Tables du Soleil* have been used ; but the same Constant of Aberration as for the fixed stars. The Mean Obliquity exceeds that of PETERS by $0''.32$.

The General Constants for Star Reduction are adapted to the formulæ given on page 258. They are computed from the *Tables to facilitate the Reduction of Places of the Fixed Stars, prepared for the use of the American Ephemeris and Nautical Almanac*, Washington, 1869, which have been used in the preparation of previous volumes of this work subsequent to that of 1861.

The right ascensions of the 48 circumpolar stars north of $+ 64^\circ$ north declination are from Dr. GOULD's *Standard Places of Fundamental Stars*, second edition, U. S. Coast Survey Office, 1866. Tables of mean places are found in the *Star Tables* above quoted. The right ascensions of the stars between $+ 64^\circ$ and $- 50^\circ$ are from an unpublished investigation, except that the places of such of the 36 Maskelyne fundamental stars, as are found in Appendix III to the *Washington Observations* for 1870, are taken from that work. Of the 12 stars south of $- 50^\circ$, the positions of β Hydri, α Trianguli Australis, and σ Octantis, have been corrected from data furnished by Dr. GOULD, while the remaining 9 are, as before, from the *British Nautical Almanac* for 1848.

The declinations are all from Boss's paper on the declinations of 498 standard stars, now in press, except in the case of 9 stars now added for the first time, of which the declinations have been investigated anew, and reduced to Boss's standard.

* PETERS' *Numerus Constans Nutationis*, p. 71.

† Ibid., pp. 66 and 71.

‡ STRUVE's *Constant de l'Aberration*, p. 47.

APPENDIX.

To the apparent places of Sirius and Procyon have been applied the periodic corrections resulting from AUWERS's investigations. The values of these corrections are:—

	SIRIUS.		PROCYON.	
1881.0	$\Delta \alpha = -.067$	$\Delta \delta = -1.45$	$\Delta \alpha = -.045$	$\Delta \delta = +0.80$
1882.0	$-.052$	-1.44	$-.036$	$+0.90$

The mean places of the moon-culminating stars, and of stars which may be occulted by the moon, have been derived from the best recent authorities.

The Ephemeris of the Sun* is constructed from HANSEN and OLUFSEN's *Tables du Soleil*, Copenhagen, 1853, except that STRUVE's aberration has been used. This is equivalent to adding $0''.19$ to the longitudes, but does not affect the right ascensions and declinations. The Sun's rectangular equatorial coördinates have been computed from the longitudes and latitudes by the following formulæ:

$$\begin{aligned} X &= R \cos \lambda \\ Y &= R \sin \lambda \cos \omega - 19.3 R \beta \\ Z &= R \sin \lambda \sin \omega + 44.5 R \beta \\ X' &= X + Y \sec \omega \Delta \lambda \\ Y' &= Y - X \cos \omega \Delta \lambda + Z \Delta \omega - 9.4 \tau R \sin (\odot + 187^\circ) \\ Z' &= Z - X \sin \omega \Delta \lambda - Y \Delta \omega + 21.7 \tau R \sin (\odot + 187^\circ) \end{aligned}$$

in which λ and β are the longitude and latitude of the sun referred to the equinox and ecliptic of the date; ω is the obliquity of the ecliptic; $\Delta \lambda$ the reduction of longitude for precession and nutation from January 0; $\Delta \omega$ the reduction of the mean to the apparent obliquity; τ the part of the year since January 0; and the numerical coefficients are in units of the 7th place of decimals. The correction for latitude has been taken from GOETZE's paper in the *Astron. Journal*, Vol. II, p. 71.

The mean equatorial Horizontal Parallax of the Sun, adopted from Prof. NEWCOMB's *Investigation of the Distance of the Sun and the Elements which depend on it*,† is $8''.848$. The adopted Semidiameter of the Sun at the Earth's mean distance is $16' 2''$.

The Ephemeris of the Moon is constructed from PRICE's *Tables of the Moon*, 2d edition, Washington, 1865. They include the *Tables of the Moon's Parallax* constructed from WALKER's and ADAMS's formulæ.

The Semidiameter of the Moon is computed from the Moon's Horizontal Parallax by the formula,

$$S = .272274 \pi + 2''.5.$$

A semidiameter $2''.5$ less is found to be better adapted for the computation of eclipses and occultations.

The Ephemeris of Mercury is derived from Prof. WINLOCK's *Tables of Mercury*, Washington, 1864. They are based on the theory of LE VERRIER, published in the *Additions to the Connaissance des Temps* for 1848.

The Ephemeris of Venus is derived from Mr. G. W. HILL's *Tables of Venus*, Washington, 1872.

The Ephemeris of Mars is derived from manuscript Tables constructed from LINDENAU's Tables. Mr. HUGH BREEN's results, contained in his paper *On the Corrections of LINDENAU's Elements of Mars*, published in the *Memoirs of the Royal Astronomical Society*, Vol. XX., have also been discussed and applied; and LE VERRIER's secular variations

* From CARLINI's Tables before 1858.

† *Astronomical Observations made at the U. S. Naval Observatory, Washington, 1865, Appendix II.*

CONSTRUCTION OF THE ALMANAC.

of the elements are likewise adopted. The following are the corresponding corrected elements, and annual variations for Washington, 1855.0:

$$\begin{aligned} L &= 320^{\circ} 13' 33.87'' + 689101''.1527 t. \\ \pi &= 333^{\circ} 23' 17.84'' + 65''.9990 t. \\ \Omega &= 48^{\circ} 25' 55.29'' + 27''.6997 t. \\ i &= 1^{\circ} 51' 2.20'' - 0''.02141 t. \\ e &= 19238''.75 + 0''.18549 t. \\ n &= 689050''.8927 \\ a &= 1.5236915 \end{aligned}$$

The Ephemeris of Jupiter is derived from manuscript Tables constructed from BOUVARD'S Tables, with such changes as were required to make them correspond more nearly to the formulæ.

The Ephemeris of Saturn is derived from BOUVARD'S Tables. The perturbations produced by Jupiter, and the change of the Great Inequality since 1840, have been increased by $\frac{1}{6}$ of their value. ADAMS'S Table, in the *British Nautical Almanac* for 1851, has been substituted for BOUVARD'S Table XLII. The following corrections of the elements for 1855.0 have also been introduced:

$$\begin{aligned} \text{corr. mean long.} &= + 4''.9 \\ \text{corr. long. of node} &= - 143''.0 \\ \text{corr. inclination} &= - 5''.7 + 0''.0149 t. \end{aligned}$$

The Ephemeris of Uranus is derived from Prof. NEWCOMB'S *Tables of Uranus*, Washington, 1873.

The Ephemeris of Neptune is derived from Prof. NEWCOMB'S *Tables of Neptune*, Washington, 1866.

The eclipses of Jupiter's Satellites are computed from TODD'S *Continuation of DAMOISEAU'S Tables*, Washington, 1876.

The semidiameters of the Planets are computed from the following values:

	Semidiameter.	Log Dist.	Authority.
Mercury	3.34	0.00	LE VERRIER, <i>Theory of Mercury</i> .
Venus	8.546 \pm 0.086	0.00	PEIRCE, from the Washington Observations of 1845 and 1846, made with the mural circle.
Mars (polar)	2.842 \pm 0.057	0.25	
Jupiter (polar)	18.78 \pm 0.067	0.70	
Saturn (polar)	8.77 \pm 0.039	0.95	
Uranus	1.68 \pm 0.3	1.30	
Jupiter (equat.)	20.00	0.70	
Saturn (equat.)	9.38	0.95	

The apparent elements of Saturn's Rings are computed from BESSEL'S data, except those for BOND'S dusky ring.

The Tables for the eclipses of the sun are adapted to the modification of BESSEL'S formulæ, suggested by T. HENRY SAFFORD, jr. The formulæ are given in PEIRCE'S *Spherical Astronomy* and CHAUVENET'S *Spherical and Practical Astronomy*, Vol. I.

The elements for occultations of stars by the moon are adapted to BESSEL'S method in the *Astronomische Nachrichten*, Vol. VII., and the *Berliner Astronomisches Jahrbuch* for 1831. The formulæ are also to be found in CHAUVENET'S *Astronomy*.

The intervals of original computation have in all cases been made sufficiently small to authorize the use of the differences as a check of the accuracy of the work. The results have also been tested, in various portions, by means of duplicate computations. The proofs from the stereotype plates have been thoroughly examined by an independent series of differences.

APPENDIX.

The principal computations of the Ephemeris have been distributed in the following manner:

The Sun has been computed by Mr. EASTWOOD; the Moon's longitude, latitude, semi-diameter and horizontal parallax, by Prof. KEITH; right ascension and declination, by Prof. VAN VLECK; and culminations, by Prof. RUNKLE; the lunar distances, by Mr. W. B. OLIVER; Mercury and Venus, by Mr. AUSTIN; Mars and Uranus, by Mr. FERREL; Jupiter and Jupiter's Satellites, by Prof. KENDALL; Saturn, by Mr. G. W. HILL; and Neptune, by Mr. WIESSNER; the fixed stars have been prepared by Mr. WIESSNER, Mr. LOOMIS, and Dr. TOWNSEND; the general constants for their reduction, by Mr. FERREL; and the occultations, by Mr. DOWNES assisted by Mr. WIESSNER; the eclipses have been computed and the charts projected by Mr. HILL.

TABLE I.

TABLE SHOWING THE CORRECTION REQUIRED, ON ACCOUNT OF SECOND DIFFERENCES OF THE MOON'S MOTION, IN FINDING THE GREENWICH TIME CORRESPONDING TO A CORRECTED LUNAR DISTANCE.

Approximate Interval.				Difference of the Proportional Logarithms in the Ephemeris.																											
				2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52		
h	m	h	m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s			
0 0	3 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0			
0 10	2 50	0 0	0 0	0 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 3	3 3	3 3	3 3	3 3	3 3	3 3	3 3			
0 20	2 40	0 1	1 1	1 1	1 1	2 2	2 2	2 2	2 2	2 2	2 2	3 3	3 3	3 3	3 3	4 4	4 4	4 4	4 4	4 4	5 5	5 5	5 5	6 6	6 6	6 6	6 6	6 6			
0 30	2 30	0 1	1 1	2 2	2 2	2 2	2 2	3 3	3 3	3 3	3 3	4 4	4 4	5 5	5 5	6 6	6 6	6 6	7 7	7 7	7 7	8 8	8 8	8 8	9 9	9 9	9 9	9 9			
0 40	2 20	0 1	1 1	2 2	2 2	3 3	3 3	3 3	4 4	4 4	5 5	5 5	6 6	6 6	6 6	7 7	7 7	8 8	8 8	9 9	9 9	10 10	10 10	10 10	11 11	11 11	11 11	11 11			
0 50	2 10	1 1	1 1	2 2	2 2	3 3	3 3	4 4	4 4	5 5	5 5	6 6	6 6	7 7	7 7	8 8	8 8	9 9	9 9	10 10	10 10	11 11	11 11	12 12	12 12	13 13	13 13	13 13			
1 0	2 0	1 1	1 1	2 2	2 2	3 3	3 3	4 4	4 4	5 5	6 6	6 6	7 7	7 7	8 8	8 8	9 9	9 9	10 10	10 10	11 11	12 12	12 12	13 13	13 13	14 14	14 14	14 14			
1 10	1 50	1 1	1 1	2 2	2 2	3 3	4 4	4 4	5 5	6 6	6 6	7 7	8 8	8 8	9 9	9 9	10 10	10 10	11 11	11 11	12 12	12 12	13 13	14 14	14 14	15 15	15 15	15 15			
1 20	1 40	1 1	1 1	2 2	3 3	4 4	4 4	5 5	6 6	6 6	7 7	8 8	9 9	9 9	10 10	10 10	11 11	12 12	12 12	13 13	14 14	14 14	15 15	15 15	16 16	16 16	16 16	16 16			
1 30	1 30	1 1	1 1	2 2	3 3	3 3	4 4	4 4	5 5	6 6	6 6	7 7	8 8	9 9	9 9	10 10	11 11	11 11	12 12	12 12	13 13	14 14	14 14	15 15	16 16	16 16	16 16	16 16			
				Difference of the Proportional Logarithms in the Ephemeris.																											
h	m	h	m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s			
0 0	3 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0			
0 10	2 50	4 4	4 4	4 4	4 4	4 4	4 4	4 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	6 6	6 6	6 6	6 6	6 6	6 6	6 6	6 6	6 6	6 6	7 7	7 7	7 7			
0 20	2 40	7 7	7 7	7 7	8 8	8 8	8 8	8 8	9 9	9 9	9 9	9 10	10 10	10 10	10 10	11 11	11 11	11 11	11 11	11 11	11 11	12 12	12 12	12 12	12 12	12 12	13 13	13 13			
0 30	2 30	9 10	10 10	10 10	11 11	11 11	12 12	12 12	12 13	13 13	13 13	13 14	14 14	14 15	15 15	15 16	16 16	16 16	17 17	17 17	17 17	18 18	18 18	18 18	19 19	19 19	19 19	19 19			
0 40	2 20	12 12	13 13	13 13	13 14	14 14	14 15	15 15	16 16	16 16	16 17	17 17	17 18	18 18	18 19	19 19	19 20	20 20	20 20	21 21	21 21	21 21	22 22	22 22	22 22	23 23	23 23	23 23			
0 50	2 10	14 14	15 15	15 15	16 16	16 16	17 17	17 17	18 18	19 19	19 19	20 20	20 21	21 21	21 22	22 22	22 22	22 22	23 23	23 23	24 24	24 24	25 25	25 25	26 26	26 26	26 26	26 26			
1 0	2 0	15 16	16 17	17 17	17 18	18 18	18 19	19 19	19 20	20 20	21 21	21 22	22 22	22 23	23 23	23 24	24 24	24 25	25 25	25 26	26 26	26 27	27 27	27 28	28 28	28 29	29 29	29 29			
1 10	1 50	16 17	17 18	18 18	18 19	19 19	19 20	20 20	21 21	21 22	22 22	22 23	23 24	24 24	24 25	25 25	26 26	26 27	27 27	27 28	28 28	28 29	29 29	29 30	30 30	30 30	30 30	30 30			
1 20	1 40	17 17	18 19	19 19	19 20	20 20	21 21	21 22	22 22	22 23	23 23	23 24	24 25	25 25	26 26	26 27	27 27	28 28	28 29	29 29	29 30	30 30	30 31	31 31	31 31	31 31	31 31	31 31			
1 30	1 30	17 18	18 19	19 19	20 20	21 21	21 22	22 22	23 23	23 24	24 24	24 25	25 25	26 26	27 27	27 27	28 28	28 29	29 29	29 30	30 30	31 31	31 31	31 31	31 31	31 31	31 31	31 31			
				Difference of the Proportional Logarithms in the Ephemeris.																											
h	m	h	m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s			
0 0	3 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0			
0 10	2 50	7 7	7 7	7 7	7 7	7 7	7 7	8 8	8 8	8 8	8 8	8 8	8 8	8 8	8 8	8 8	8 8	8 8	8 8	8 8	8 8	8 8	8 8	8 8	8 8	8 8	8 8	8 8			
0 20	2 40	13 13	13 13	13 13	14 14	14 14	14 14	14 14	15 15	15 15	15 15	15 15	15 15	15 15	15 15	15 15	16 16	16 16	16 16	16 16	16 16	16 16	16 16	16 16	16 16	16 16	16 16	16 16			
0 30	2 30	18 18	18 18	19 19	19 19	19 19	20 20	20 20	20 20	21 21	21 21	21 21	21 21	21 21	21 21	22 22	22 22	22 22	22 22	22 22	23 23	23 23	23 23	24 24	24 24	24 24	24 24	24 24			
0 40	2 20	22 22	23 23	23 23	24 24	24 24	25 25	25 25	25 25	26 26	26 26	26 26	27 27	27 27	27 27	27 27	28 28	28 28	28 28	28 28	29 29	29 29	29 29	29 29	29 29	30 30	30 30	30 30			
0 50	2 10	26 26	26 26	27 27	27 27	28 28	29 29	29 29	29 29	30 30	30 30	30 30	31 31	31 31	31 31	31 31	32 32	32 32	32 32	33 33	33 33	33 33	34 34	34 34	34 34	34 34	34 34	34 34			
1 0	2 0	29 29	29 30	30 30	30 31	31 31	32 32	32 33	33 33	33 33	33 33	34 34	34 34	35 35	35 35	36 36	36 36	36 36	37 37	37 37	37 37	38 38	38 38	38 38	39 39	39 39	39 39	39 39			
1 10	1 50	31 31	31 32	32 32	33 33	33 34	34 34	34 35	35 35	35 35	36 36	36 37	37 37	37 38	38 38	38 38	39 39	39 39	39 39	40 40	40 40	40 40	41 41	41 41	41 41	42 42	42 42	42 42			
1 20	1 40	32 32	33 33	33 34	34 34	34 35	35 35	35 36	36 36	36 37	37 37	37 38	38 38	38 39	39 39	39 39	40 40	40 40	41 41	41 41	41 41	42 42	42 42	42 42	43 43	43 43	43 43	43 43			
1 30	1 30	32 32	33 33	34 34	34 34	35 35	35 35	36 36	36 36	37 37	37 37	38 38	38 38	39 39	39 39	39 39	40 40	40 40	41 41	41 41	42 42	42 42	42 42	43 43	43 43	43 43	43 43	43 43			

The Correction is to be *added* to the approximate Greenwich Time when the Proportional Logarithms in the Ephemeris are *decreasing*, and *subtracted* when they are *increasing*.

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.										
Sidereal.	0 ^h .		1 ^h .		2 ^h .		3 ^h .		4 ^h .	
	m	s	m	s	m	s	m	s	m	s
0	0	0.000	0	9.830	0	19.659	0	29.489	0	39.318
1	0	0.164	0	9.993	0	19.823	0	29.653	0	39.482
2	0	0.328	0	10.157	0	19.987	0	29.816	0	39.646
3	0	0.491	0	10.321	0	20.151	0	29.980	0	39.810
4	0	0.655	0	10.485	0	20.314	0	30.144	0	39.974
5	0	0.819	0	10.649	0	20.478	0	30.308	0	40.137
6	0	0.983	0	10.813	0	20.642	0	30.472	0	40.301
7	0	1.147	0	10.976	0	20.806	0	30.635	0	40.465
8	0	1.311	0	11.140	0	20.970	0	30.799	0	40.629
9	0	1.474	0	11.304	0	21.134	0	30.963	0	40.793
10	0	1.638	0	11.468	0	21.297	0	31.127	0	40.956
11	0	1.802	0	11.632	0	21.461	0	31.291	0	41.120
12	0	1.966	0	11.795	0	21.625	0	31.455	0	41.284
13	0	2.130	0	11.959	0	21.789	0	31.618	0	41.448
14	0	2.294	0	12.123	0	21.953	0	31.782	0	41.612
15	0	2.457	0	12.287	0	22.117	0	31.946	0	41.776
16	0	2.621	0	12.451	0	22.280	0	32.110	0	41.939
17	0	2.785	0	12.615	0	22.444	0	32.274	0	42.103
18	0	2.949	0	12.778	0	22.608	0	32.438	0	42.267
19	0	3.113	0	12.942	0	22.772	0	32.601	0	42.431
20	0	3.277	0	13.106	0	22.936	0	32.765	0	42.595
21	0	3.440	0	13.270	0	23.099	0	32.929	0	42.759
22	0	3.604	0	13.434	0	23.263	0	33.093	0	42.922
23	0	3.768	0	13.598	0	23.427	0	33.257	0	43.086
24	0	3.932	0	13.761	0	23.591	0	33.420	0	43.250
25	0	4.096	0	13.925	0	23.755	0	33.584	0	43.414
26	0	4.259	0	14.089	0	23.919	0	33.748	0	43.578
27	0	4.423	0	14.253	0	24.082	0	33.912	0	43.742
28	0	4.587	0	14.417	0	24.246	0	34.076	0	43.905
29	0	4.751	0	14.581	0	24.410	0	34.240	0	44.069
30	0	4.915	0	14.744	0	24.574	0	34.403	0	44.233
31	0	5.079	0	14.908	0	24.738	0	34.567	0	44.397
32	0	5.242	0	15.072	0	24.902	0	34.731	0	44.561
33	0	5.406	0	15.236	0	25.065	0	34.895	0	44.724
34	0	5.570	0	15.400	0	25.229	0	35.059	0	44.888
35	0	5.734	0	15.563	0	25.393	0	35.223	0	45.052
36	0	5.898	0	15.727	0	25.557	0	35.386	0	45.216
37	0	6.062	0	15.891	0	25.721	0	35.550	0	45.380
38	0	6.225	0	16.055	0	25.885	0	35.714	0	45.544
39	0	6.389	0	16.219	0	26.048	0	35.878	0	45.707
40	0	6.553	0	16.383	0	26.212	0	36.042	0	45.871
41	0	6.717	0	16.546	0	26.376	0	36.206	0	46.035
42	0	6.881	0	16.710	0	26.540	0	36.369	0	46.199
43	0	7.045	0	16.874	0	26.704	0	36.533	0	46.363
44	0	7.208	0	17.038	0	26.867	0	36.697	0	46.527
45	0	7.372	0	17.202	0	27.031	0	36.861	0	46.690
46	0	7.536	0	17.366	0	27.195	0	37.025	0	46.854
47	0	7.700	0	17.529	0	27.359	0	37.188	0	47.018
48	0	7.864	0	17.693	0	27.523	0	37.352	0	47.182
49	0	8.027	0	17.857	0	27.687	0	37.516	0	47.346
50	0	8.191	0	18.021	0	27.850	0	37.680	0	47.510
51	0	8.355	0	18.185	0	28.014	0	37.844	0	47.673
52	0	8.519	0	18.349	0	28.178	0	38.008	0	47.837
53	0	8.683	0	18.512	0	28.342	0	38.171	0	48.001
54	0	8.847	0	18.676	0	28.506	0	38.335	0	48.165
55	0	9.010	0	18.840	0	28.670	0	38.499	0	48.329
56	0	9.174	0	19.004	0	28.833	0	38.663	0	48.492
57	0	9.338	0	19.168	0	28.997	0	38.827	0	48.656
58	0	9.502	0	19.331	0	29.161	0	38.991	0	48.820
59	0	9.666	0	19.495	0	29.325	0	39.154	0	48.984
										For Seconds.
										1 0.003
										2 .005
										3 .008
										4 .011
										5 .014
										6 .016
										7 .019
										8 .022
										9 .025
										10 .027
										11 .030
										12 .033
										13 .035
										14 .038
										15 .041
										16 .044
										17 .046
										18 .049
										19 .052
										20 .055
										21 .057
										22 .060
										23 .063
										24 .066
										25 .068
										26 .071
										27 .074
										28 .076
										29 .079
										30 .082
										31 .085
										32 .087
										33 .090
										34 .093
										35 .096
										36 .098
										37 .101
										38 .104
										39 .106
										40 .109
										41 .112
										42 .115
										43 .117
										44 .120
										45 .123
										46 .126
										47 .128
										48 .131
										49 .134
										50 .137
										51 .139
										52 .142
										53 .145
										54 .147
										55 .150
										56 .153
										57 .156
										58 .158
										59 .0161

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Sidereal.	8 ^h .	9 ^h .	10 ^h .	11 ^h .	12 ^h .	13 ^h .	14 ^h .	15 ^h .	For Seconds.
0	1 18.636	1 28.466	1 38.296	1 48.125	1 57.955	2 7.784	2 17.614	2 27.443	
1	1 18.800	1 28.630	1 38.459	1 48.289	1 58.119	2 7.948	2 17.778	2 27.607	1 0.003
2	1 18.964	1 28.794	1 38.623	1 48.453	1 58.282	2 8.112	2 17.941	2 27.771	2 .005
3	1 19.128	1 28.958	1 38.787	1 48.617	1 58.446	2 8.276	2 18.105	2 27.935	3 .008
4	1 19.292	1 29.121	1 38.951	1 48.780	1 58.610	2 8.440	2 18.269	2 28.099	4 .011
5	1 19.456	1 29.285	1 39.115	1 48.944	1 58.774	2 8.603	2 18.433	2 28.263	5 .014
6	1 19.619	1 29.449	1 39.279	1 49.108	1 58.938	2 8.767	2 18.597	2 28.426	6 .016
7	1 19.783	1 29.613	1 39.442	1 49.272	1 59.101	2 8.931	2 18.761	2 28.590	7 .019
8	1 19.947	1 29.777	1 39.606	1 49.436	1 59.265	2 9.095	2 18.924	2 28.754	8 .022
9	1 20.111	1 29.940	1 39.770	1 49.600	1 59.429	2 9.259	2 19.088	2 28.918	9 .025
10	1 20.275	1 30.104	1 39.934	1 49.763	1 59.593	2 9.423	2 19.252	2 29.082	10 .027
11	1 20.439	1 30.268	1 40.098	1 49.927	1 59.757	2 9.586	2 19.416	2 29.245	11 .030
12	1 20.602	1 30.432	1 40.261	1 50.091	1 59.921	2 9.750	2 19.580	2 29.409	12 .033
13	1 20.766	1 30.596	1 40.425	1 50.255	2 0.084	2 9.914	2 19.744	2 29.573	13 .035
14	1 20.930	1 30.760	1 40.589	1 50.419	2 0.248	2 10.078	2 19.907	2 29.737	14 .038
15	1 21.094	1 30.923	1 40.753	1 50.583	2 0.412	2 10.242	2 20.071	2 29.901	15 .041
16	1 21.258	1 31.087	1 40.917	1 50.746	2 0.576	2 10.405	2 20.235	2 30.065	16 .044
17	1 21.422	1 31.251	1 41.081	1 50.910	2 0.740	2 10.569	2 20.399	2 30.229	17 .046
18	1 21.585	1 31.415	1 41.244	1 51.074	2 0.904	2 10.733	2 20.563	2 30.392	18 .049
19	1 21.749	1 31.579	1 41.408	1 51.238	2 1.067	2 10.897	2 20.727	2 30.556	19 .052
20	1 21.913	1 31.743	1 41.572	1 51.402	2 1.231	2 11.061	2 20.890	2 30.720	20 .055
21	1 22.077	1 31.906	1 41.736	1 51.565	2 1.395	2 11.225	2 21.054	2 30.884	21 .057
22	1 22.241	1 32.070	1 41.900	1 51.729	2 1.559	2 11.388	2 21.218	2 31.048	22 .060
23	1 22.404	1 32.234	1 42.064	1 51.893	2 1.723	2 11.552	2 21.382	2 31.211	23 .063
24	1 22.568	1 32.398	1 42.227	1 52.057	2 1.887	2 11.716	2 21.546	2 31.375	24 .066
25	1 22.732	1 32.562	1 42.391	1 52.221	2 2.050	2 11.880	2 21.709	2 31.539	25 .068
26	1 22.896	1 32.726	1 42.555	1 52.385	2 2.214	2 12.044	2 21.873	2 31.703	26 .071
27	1 23.060	1 32.890	1 42.719	1 52.548	2 2.378	2 12.208	2 22.037	2 31.867	27 .074
28	1 23.224	1 33.053	1 42.883	1 52.712	2 2.542	2 12.371	2 22.201	2 32.031	28 .076
29	1 23.387	1 33.217	1 43.047	1 52.876	2 2.706	2 12.535	2 22.365	2 32.194	29 .079
30	1 23.551	1 33.381	1 43.210	1 53.040	2 2.869	2 12.699	2 22.529	2 32.358	30 .082
31	1 23.715	1 33.545	1 43.374	1 53.204	2 3.033	2 12.863	2 22.692	2 32.522	31 .085
32	1 23.879	1 33.708	1 43.538	1 53.368	2 3.197	2 13.027	2 22.856	2 32.686	32 .087
33	1 24.043	1 33.872	1 43.702	1 53.531	2 3.361	2 13.191	2 23.020	2 32.850	33 .090
34	1 24.207	1 34.036	1 43.866	1 53.695	2 3.525	2 13.354	2 23.184	2 33.013	34 .093
35	1 24.370	1 34.200	1 44.029	1 53.859	2 3.689	2 13.518	2 23.348	2 33.177	35 .096
36	1 24.534	1 34.364	1 44.193	1 54.023	2 3.852	2 13.682	2 23.512	2 33.341	36 .098
37	1 24.698	1 34.528	1 44.357	1 54.187	2 4.016	2 13.846	2 23.675	2 33.505	37 .101
38	1 24.862	1 34.691	1 44.521	1 54.351	2 4.180	2 14.010	2 23.839	2 33.669	38 .104
39	1 25.026	1 34.855	1 44.685	1 54.514	2 4.344	2 14.173	2 24.003	2 33.833	39 .106
40	1 25.190	1 35.019	1 44.849	1 54.678	2 4.508	2 14.337	2 24.167	2 33.996	40 .109
41	1 25.353	1 35.183	1 45.012	1 54.842	2 4.672	2 14.501	2 24.331	2 34.160	41 .112
42	1 25.517	1 35.347	1 45.176	1 55.006	2 4.835	2 14.665	2 24.495	2 34.324	42 .115
43	1 25.681	1 35.511	1 45.340	1 55.170	2 4.999	2 14.829	2 24.659	2 34.488	43 .117
44	1 25.845	1 35.674	1 45.504	1 55.333	2 5.163	2 14.993	2 24.822	2 34.652	44 .120
45	1 26.009	1 35.838	1 45.668	1 55.497	2 5.327	2 15.156	2 24.986	2 34.816	45 .123
46	1 26.172	1 36.002	1 45.832	1 55.661	2 5.491	2 15.320	2 25.150	2 34.979	46 .126
47	1 26.336	1 36.166	1 45.995	1 55.825	2 5.655	2 15.484	2 25.314	2 35.143	47 .128
48	1 26.500	1 36.330	1 46.159	1 55.989	2 5.818	2 15.648	2 25.477	2 35.307	48 .131
49	1 26.664	1 36.493	1 46.323	1 56.153	2 5.982	2 15.812	2 25.641	2 35.471	49 .134
50	1 26.828	1 36.657	1 46.487	1 56.316	2 6.146	2 15.976	2 25.805	2 35.635	50 .137
51	1 26.992	1 36.821	1 46.651	1 56.480	2 6.310	2 16.139	2 25.969	2 35.798	51 .139
52	1 27.155	1 36.985	1 46.815	1 56.644	2 6.474	2 16.303	2 26.133	2 35.962	52 .142
53	1 27.319	1 37.149	1 46.978	1 56.808	2 6.637	2 16.467	2 26.297	2 36.126	53 .145
54	1 27.483	1 37.313	1 47.142	1 56.972	2 6.801	2 16.631	2 26.460	2 36.290	54 .147
55	1 27.647	1 37.476	1 47.306	1 57.136	2 6.965	2 16.795	2 26.624	2 36.454	55 .150
56	1 27.811	1 37.640	1 47.470	1 57.299	2 7.129	2 16.959	2 26.788	2 36.618	56 .153
57	1 27.975	1 37.804	1 47.634	1 57.463	2 7.293	2 17.122	2 26.952	2 36.781	57 .156
58	1 28.138	1 37.968	1 47.797	1 57.627	2 7.457	2 17.286	2 27.116	2 36.945	58 .158
59	1 28.302	1 38.132	1 47.961	1 57.791	2 7.620	2 17.450	2 27.280	2 37.109	59 0.161

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.										
Sidereal.	16 ^h .	17 ^h .	18 ^h .	19 ^h .	20 ^h .	21 ^h .	22 ^h .	23 ^h .	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	2 37.273	2 47.102	2 56.932	3 6.762	3 16.591	3 26.421	3 36.250	3 46.080	1	0.003
1	2 37.437	2 47.266	2 57.096	3 6.925	3 16.755	3 26.585	3 36.414	3 46.244	2	.005
2	2 37.601	2 47.430	2 57.260	3 7.089	3 16.919	3 26.748	3 36.578	3 46.407	3	.008
3	2 37.764	2 47.594	2 57.424	3 7.253	3 17.083	3 26.912	3 36.742	3 46.571	4	.011
4	2 37.928	2 47.758	2 57.587	3 7.417	3 17.246	3 27.076	3 36.906	3 46.735	5	.014
5	2 38.092	2 47.922	2 57.751	3 7.581	3 17.410	3 27.240	3 37.069	3 46.899	6	.016
6	2 38.256	2 48.085	2 57.915	3 7.745	3 17.574	3 27.404	3 37.233	3 47.063	7	.019
7	2 38.420	2 48.249	2 58.079	3 7.908	3 17.738	3 27.568	3 37.397	3 47.227	8	.022
8	2 38.584	2 48.413	2 58.243	3 8.072	3 17.902	3 27.731	3 37.561	3 47.390	9	.025
9	2 38.747	2 48.577	2 58.406	3 8.236	3 18.066	3 27.895	3 37.725	3 47.554	10	.027
10	2 38.911	2 48.741	2 58.570	3 8.400	3 18.229	3 28.059	3 37.889	3 47.718	11	.030
11	2 39.075	2 48.905	2 58.734	3 8.564	3 18.393	3 28.223	3 38.053	3 47.882	12	.033
12	2 39.239	2 49.068	2 58.898	3 8.728	3 18.557	3 28.387	3 38.216	3 48.046	13	.036
13	2 39.403	2 49.232	2 59.062	3 8.891	3 18.721	3 28.550	3 38.380	3 48.210	14	.038
14	2 39.566	2 49.396	2 59.226	3 9.055	3 18.885	3 28.714	3 38.544	3 48.373	15	.041
15	2 39.730	2 49.560	2 59.389	3 9.219	3 19.049	3 28.878	3 38.708	3 48.537	16	.044
16	2 39.894	2 49.724	2 59.553	3 9.383	3 19.212	3 29.042	3 38.871	3 48.701	17	.046
17	2 40.058	2 49.888	2 59.717	3 9.547	3 19.376	3 29.206	3 39.035	3 48.865	18	.049
18	2 40.222	2 50.051	2 59.881	3 9.710	3 19.540	3 29.370	3 39.199	3 49.029	19	.052
19	2 40.386	2 50.215	3 0.045	3 9.874	3 19.704	3 29.533	3 39.363	3 49.193	20	.055
20	2 40.549	2 50.379	3 0.209	3 10.038	3 19.868	3 29.697	3 39.527	3 49.356	21	.057
21	2 40.713	2 50.543	3 0.372	3 10.202	3 20.032	3 29.861	3 39.691	3 49.520	22	.060
22	2 40.877	2 50.707	3 0.536	3 10.366	3 20.195	3 30.025	3 39.854	3 49.684	23	.063
23	2 41.041	2 50.870	3 0.700	3 10.530	3 20.359	3 30.189	3 40.018	3 49.848	24	.066
24	2 41.205	2 51.034	3 0.864	3 10.693	3 20.523	3 30.353	3 40.182	3 50.012	25	.068
25	2 41.369	2 51.198	3 1.028	3 10.857	3 20.687	3 30.516	3 40.346	3 50.175	26	.071
26	2 41.532	2 51.362	3 1.192	3 11.021	3 20.851	3 30.680	3 40.510	3 50.339	27	.074
27	2 41.696	2 51.526	3 1.355	3 11.185	3 21.014	3 30.844	3 40.674	3 50.503	28	.076
28	2 41.860	2 51.690	3 1.519	3 11.349	3 21.178	3 31.008	3 40.837	3 50.667	29	.079
29	2 42.024	2 51.853	3 1.683	3 11.513	3 21.342	3 31.172	3 41.001	3 50.831	30	.082
30	2 42.188	2 52.017	3 1.847	3 11.676	3 21.506	3 31.336	3 41.165	3 50.995	31	.085
31	2 42.352	2 52.181	3 2.011	3 11.840	3 21.670	3 31.499	3 41.329	3 51.158	32	.087
32	2 42.515	2 52.345	3 2.174	3 12.004	3 21.834	3 31.663	3 41.493	3 51.322	33	.090
33	2 42.679	2 52.509	3 2.338	3 12.168	3 21.997	3 31.827	3 41.657	3 51.486	34	.093
34	2 42.843	2 52.673	3 2.502	3 12.332	3 22.161	3 31.991	3 41.820	3 51.650	35	.096
35	2 43.007	2 52.836	3 2.666	3 12.496	3 22.325	3 32.155	3 41.984	3 51.814	36	.098
36	2 43.171	2 53.000	3 2.830	3 12.659	3 22.489	3 32.318	3 42.148	3 51.978	37	.101
37	2 43.334	2 53.164	3 2.994	3 12.823	3 22.653	3 32.482	3 42.312	3 52.141	38	.104
38	2 43.498	2 53.328	3 3.157	3 12.987	3 22.817	3 32.646	3 42.476	3 52.305	39	.106
39	2 43.662	2 53.492	3 3.321	3 13.151	3 22.980	3 32.810	3 42.639	3 52.469	40	.109
40	2 43.826	2 53.656	3 3.485	3 13.315	3 23.144	3 32.974	3 42.803	3 52.633	41	.112
41	2 43.990	2 53.819	3 3.649	3 13.478	3 23.308	3 33.138	3 42.967	3 52.797	42	.115
42	2 44.154	2 53.983	3 3.813	3 13.642	3 23.472	3 33.301	3 43.131	3 52.961	43	.117
43	2 44.317	2 54.147	3 3.977	3 13.806	3 23.636	3 33.465	3 43.295	3 53.124	44	.120
44	2 44.481	2 54.311	3 4.140	3 13.970	3 23.800	3 33.629	3 43.459	3 53.288	45	.123
45	2 44.645	2 54.475	3 4.304	3 14.134	3 23.963	3 33.793	3 43.623	3 53.452	46	.126
46	2 44.809	2 54.638	3 4.468	3 14.298	3 24.127	3 33.957	3 43.786	3 53.616	47	.128
47	2 44.973	2 54.802	3 4.632	3 14.461	3 24.291	3 34.121	3 43.950	3 53.780	48	.131
48	2 45.137	2 54.966	3 4.796	3 14.625	3 24.455	3 34.284	3 44.114	3 53.943	49	.134
49	2 45.300	2 55.130	3 4.960	3 14.789	3 24.619	3 34.448	3 44.278	3 54.107	50	.137
50	2 45.464	2 55.294	3 5.123	3 14.953	3 24.782	3 34.612	3 44.442	3 54.271	51	.139
51	2 45.628	2 55.458	3 5.287	3 15.117	3 24.946	3 34.776	3 44.605	3 54.435	52	.142
52	2 45.792	2 55.621	3 5.451	3 15.281	3 25.110	3 34.940	3 44.769	3 54.599	53	.145
53	2 45.956	2 55.785	3 5.615	3 15.444	3 25.274	3 35.104	3 44.933	3 54.763	54	.147
54	2 46.120	2 55.949	3 5.779	3 15.608	3 25.438	3 35.267	3 45.097	3 54.926	55	.150
55	2 46.283	2 56.113	3 5.942	3 15.772	3 25.602	3 35.431	3 45.261	3 55.090	56	.153
56	2 46.447	2 56.277	3 6.106	3 15.936	3 25.765	3 35.595	3 45.425	3 55.254	57	.156
57	2 46.611	2 56.441	3 6.270	3 16.100	3 25.929	3 35.759	3 45.589	3 55.418	58	.158
58	2 46.775	2 56.604	3 6.434	3 16.264	3 26.093	3 35.923	3 45.753	3 55.582	59	0.161
59	2 46.939	2 56.768	3 6.598	3 16.427	3 26.257	3 36.086	3 45.916	3 55.746		

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	0 ^h .	1 ^h .	2 ^h .	3 ^h .	4 ^h .	5 ^h .	6 ^h .	7 ^h .	For Seconds.
m	m s	m s	m s	m s	m s	m s	m s	m s	s s
0	0 0.000	0 9.856	0 19.713	0 29.569	0 39.426	0 49.282	0 59.139	1 8.995	1 0.003
1	0 0.164	0 10.021	0 19.877	0 29.734	0 39.590	0 49.447	0 59.303	1 9.160	2 .005
2	0 0.329	0 10.185	0 20.041	0 29.898	0 39.754	0 49.611	0 59.467	1 9.324	3 .008
3	0 0.493	0 10.349	0 20.206	0 30.062	0 39.919	0 49.775	0 59.632	1 9.488	4 .011
4	0 0.657	0 10.514	0 20.370	0 30.227	0 40.083	0 49.939	0 59.796	1 9.652	5 .014
5	0 0.821	0 10.678	0 20.534	0 30.391	0 40.247	0 50.104	0 59.963	1 9.817	6 .016
6	0 0.986	0 10.842	0 20.699	0 30.555	0 40.412	0 50.268	1 0.124	1 9.981	7 .019
7	0 1.150	0 11.006	0 20.863	0 30.719	0 40.576	0 50.432	1 0.289	1 10.145	8 .022
8	0 1.314	0 11.171	0 21.027	0 30.884	0 40.740	0 50.597	1 0.453	1 10.310	9 .025
9	0 1.478	0 11.335	0 21.191	0 31.048	0 40.904	0 50.761	1 0.617	1 10.474	10 .027
10	0 1.643	0 11.499	0 21.356	0 31.212	0 41.069	0 50.925	1 0.782	1 10.638	11 .030
11	0 1.807	0 11.663	0 21.520	0 31.376	0 41.233	0 51.089	1 0.946	1 10.802	12 .033
12	0 1.971	0 11.828	0 21.684	0 31.541	0 41.397	0 51.254	1 1.110	1 10.967	13 .036
13	0 2.136	0 11.992	0 21.849	0 31.705	0 41.561	0 51.418	1 1.274	1 11.131	14 .038
14	0 2.300	0 12.156	0 22.013	0 31.869	0 41.726	0 51.582	1 1.439	1 11.295	15 .041
15	0 2.464	0 12.321	0 22.177	0 32.034	0 41.890	0 51.746	1 1.603	1 11.459	16 .044
16	0 2.628	0 12.485	0 22.341	0 32.198	0 42.054	0 51.911	1 1.767	1 11.624	17 .047
17	0 2.793	0 12.649	0 22.506	0 32.362	0 42.219	0 52.075	1 1.932	1 11.788	18 .049
18	0 2.957	0 12.813	0 22.670	0 32.526	0 42.383	0 52.239	1 2.096	1 11.952	19 .052
19	0 3.121	0 12.978	0 22.834	0 32.691	0 42.547	0 52.404	1 2.260	1 12.117	20 .055
20	0 3.285	0 13.142	0 22.998	0 32.855	0 42.711	0 52.568	1 2.424	1 12.281	21 .057
21	0 3.450	0 13.306	0 23.163	0 33.019	0 42.876	0 52.732	1 2.589	1 12.445	22 .060
22	0 3.614	0 13.471	0 23.327	0 33.183	0 43.040	0 52.896	1 2.753	1 12.609	23 .063
23	0 3.778	0 13.635	0 23.491	0 33.348	0 43.204	0 53.061	1 2.917	1 12.774	24 .066
24	0 3.943	0 13.799	0 23.656	0 33.512	0 43.368	0 53.225	1 3.081	1 12.938	25 .068
25	0 4.107	0 13.963	0 23.820	0 33.676	0 43.533	0 53.389	1 3.246	1 13.102	26 .071
26	0 4.271	0 14.128	0 23.984	0 33.841	0 43.697	0 53.554	1 3.410	1 13.266	27 .074
27	0 4.435	0 14.292	0 24.148	0 34.005	0 43.861	0 53.718	1 3.574	1 13.431	28 .077
28	0 4.600	0 14.456	0 24.313	0 34.169	0 44.026	0 53.882	1 3.739	1 13.595	29 .079
29	0 4.764	0 14.620	0 24.477	0 34.333	0 44.190	0 54.046	1 3.903	1 13.759	30 .082
30	0 4.928	0 14.785	0 24.641	0 34.498	0 44.354	0 54.211	1 4.067	1 13.924	31 .085
31	0 5.093	0 14.949	0 24.805	0 34.662	0 44.518	0 54.375	1 4.231	1 14.088	32 .088
32	0 5.257	0 15.113	0 24.970	0 34.826	0 44.683	0 54.539	1 4.396	1 14.252	33 .090
33	0 5.421	0 15.278	0 25.134	0 34.990	0 44.847	0 54.703	1 4.560	1 14.416	34 .093
34	0 5.585	0 15.442	0 25.298	0 35.155	0 45.011	0 54.868	1 4.724	1 14.581	35 .096
35	0 5.750	0 15.606	0 25.463	0 35.319	0 45.176	0 55.032	1 4.888	1 14.745	36 .099
36	0 5.914	0 15.770	0 25.627	0 35.483	0 45.340	0 55.196	1 5.053	1 14.909	37 .101
37	0 6.078	0 15.935	0 25.791	0 35.648	0 45.504	0 55.361	1 5.217	1 15.073	38 .104
38	0 6.242	0 16.099	0 25.955	0 35.812	0 45.668	0 55.525	1 5.381	1 15.238	39 .107
39	0 6.407	0 16.263	0 26.120	0 35.976	0 45.833	0 55.689	1 5.546	1 15.402	40 .110
40	0 6.571	0 16.427	0 26.284	0 36.140	0 45.997	0 55.853	1 5.710	1 15.566	41 .112
41	0 6.735	0 16.592	0 26.448	0 36.305	0 46.161	0 56.018	1 5.874	1 15.731	42 .115
42	0 6.900	0 16.756	0 26.612	0 36.469	0 46.325	0 56.182	1 6.038	1 15.895	43 .118
43	0 7.064	0 16.920	0 26.777	0 36.633	0 46.490	0 56.346	1 6.203	1 16.059	44 .120
44	0 7.228	0 17.085	0 26.941	0 36.798	0 46.654	0 56.510	1 6.367	1 16.223	45 .123
45	0 7.392	0 17.249	0 27.105	0 36.962	0 46.818	0 56.675	1 6.531	1 16.388	46 .126
46	0 7.557	0 17.413	0 27.270	0 37.126	0 46.983	0 56.839	1 6.695	1 16.552	47 .129
47	0 7.721	0 17.577	0 27.434	0 37.290	0 47.147	0 57.003	1 6.860	1 16.716	48 .131
48	0 7.885	0 17.742	0 27.598	0 37.455	0 47.311	0 57.168	1 7.024	1 16.881	49 .134
49	0 8.049	0 17.906	0 27.762	0 37.619	0 47.475	0 57.332	1 7.188	1 17.045	50 .137
50	0 8.214	0 18.070	0 27.927	0 37.783	0 47.640	0 57.496	1 7.353	1 17.209	51 .140
51	0 8.378	0 18.234	0 28.091	0 37.947	0 47.804	0 57.660	1 7.517	1 17.373	52 .142
52	0 8.542	0 18.399	0 28.255	0 38.112	0 47.968	0 57.825	1 7.681	1 17.538	53 .145
53	0 8.707	0 18.563	0 28.420	0 38.276	0 48.132	0 57.989	1 7.845	1 17.702	54 .148
54	0 8.871	0 18.727	0 28.584	0 38.440	0 48.297	0 58.153	1 8.010	1 17.866	55 .151
55	0 9.035	0 18.892	0 28.748	0 38.605	0 48.461	0 58.317	1 8.174	1 18.030	56 .153
56	0 9.199	0 19.056	0 28.912	0 38.769	0 48.625	0 58.482	1 8.338	1 18.195	57 .156
57	0 9.364	0 19.220	0 29.077	0 38.933	0 48.790	0 58.646	1 8.502	1 18.359	58 .159
58	0 9.528	0 19.384	0 29.241	0 39.097	0 48.954	0 58.811	1 8.667	1 18.523	59 0.162
59	0 9.692	0 19.549	0 29.405	0 39.262	0 49.118	0 58.975	1 8.831	1 18.688	

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.										
Mean Solar	8 ^h .	9 ^h .	10 ^h .	11 ^h .	12 ^h .	13 ^h .	14 ^h .	15 ^h .	For Seconds.	
m	m	m	m	m	m	m	m	m	s	s
0	1 18.852	1 28.708	1 38.565	1 48.421	1 58.278	2 8.134	2 17.991	2 27.847	1	0.003
1	1 19.016	1 28.873	1 38.729	1 48.585	1 58.442	2 8.298	2 18.155	2 28.011	2	.005
2	1 19.180	1 29.037	1 38.893	1 48.750	1 58.606	2 8.463	2 18.319	2 28.176	3	.008
3	1 19.345	1 29.201	1 39.058	1 48.914	1 58.771	2 8.627	2 18.483	2 28.340	4	.011
4	1 19.509	1 29.365	1 39.222	1 49.078	1 58.935	2 8.791	2 18.648	2 28.504	5	.014
5	1 19.673	1 29.530	1 39.386	1 49.243	1 59.099	2 8.956	2 18.812	2 28.668	6	.016
6	1 19.837	1 29.694	1 39.550	1 49.407	1 59.263	2 9.120	2 18.976	2 28.833	7	.019
7	1 20.002	1 29.858	1 39.715	1 49.571	1 59.428	2 9.284	2 19.141	2 28.997	8	.022
8	1 20.166	1 30.022	1 39.879	1 49.735	1 59.592	2 9.448	2 19.305	2 29.161	9	.025
9	1 20.330	1 30.187	1 40.043	1 49.900	1 59.756	2 9.613	2 19.469	2 29.326	10	.027
10	1 20.495	1 30.351	1 40.207	1 50.064	1 59.920	2 9.777	2 19.633	2 29.490	11	.030
11	1 20.659	1 30.515	1 40.372	1 50.228	2 0.085	2 9.941	2 19.798	2 29.654	12	.033
12	1 20.823	1 30.680	1 40.536	1 50.393	2 0.249	2 10.105	2 19.962	2 29.818	13	.036
13	1 20.987	1 30.844	1 40.700	1 50.557	2 0.413	2 10.270	2 20.126	2 29.983	14	.038
14	1 21.152	1 31.008	1 40.865	1 50.721	2 0.578	2 10.434	2 20.290	2 30.147	15	.041
15	1 21.316	1 31.172	1 41.029	1 50.885	2 0.742	2 10.598	2 20.455	2 30.311	16	.044
16	1 21.480	1 31.337	1 41.193	1 51.050	2 0.906	2 10.763	2 20.619	2 30.476	17	.047
17	1 21.644	1 31.501	1 41.357	1 51.214	2 1.070	2 10.927	2 20.783	2 30.640	18	.049
18	1 21.809	1 31.665	1 41.522	1 51.378	2 1.235	2 11.091	2 20.948	2 30.804	19	.052
19	1 21.973	1 31.829	1 41.686	1 51.542	2 1.399	2 11.255	2 21.112	2 30.968	20	.055
20	1 22.137	1 31.994	1 41.850	1 51.707	2 1.563	2 11.420	2 21.276	2 31.133	21	.057
21	1 22.302	1 32.158	1 42.015	1 51.871	2 1.727	2 11.584	2 21.440	2 31.297	22	.060
22	1 22.466	1 32.322	1 42.179	1 52.035	2 1.892	2 11.748	2 21.605	2 31.461	23	.063
23	1 22.630	1 32.487	1 42.343	1 52.200	2 2.056	2 11.912	2 21.769	2 31.625	24	.066
24	1 22.794	1 32.651	1 42.507	1 52.364	2 2.220	2 12.077	2 21.933	2 31.790	25	.068
25	1 22.959	1 32.815	1 42.672	1 52.528	2 2.385	2 12.241	2 22.098	2 31.954	26	.071
26	1 23.123	1 32.979	1 42.836	1 52.692	2 2.549	2 12.405	2 22.262	2 32.118	27	.074
27	1 23.287	1 33.144	1 43.000	1 52.857	2 2.713	2 12.570	2 22.426	2 32.283	28	.077
28	1 23.451	1 33.308	1 43.164	1 53.021	2 2.877	2 12.734	2 22.590	2 32.447	29	.079
29	1 23.616	1 33.472	1 43.329	1 53.185	2 3.042	2 12.898	2 22.755	2 32.611	30	.082
30	1 23.780	1 33.637	1 43.493	1 53.349	2 3.206	2 13.062	2 22.919	2 32.775	31	.085
31	1 23.944	1 33.801	1 43.657	1 53.514	2 3.370	2 13.227	2 23.083	2 32.940	32	.088
32	1 24.109	1 33.965	1 43.822	1 53.678	2 3.534	2 13.391	2 23.247	2 33.104	33	.090
33	1 24.273	1 34.129	1 43.986	1 53.842	2 3.699	2 13.555	2 23.412	2 33.268	34	.093
34	1 24.437	1 34.294	1 44.150	1 54.007	2 3.863	2 13.720	2 23.576	2 33.432	35	.096
35	1 24.601	1 34.458	1 44.314	1 54.171	2 4.027	2 13.884	2 23.740	2 33.597	36	.099
36	1 24.766	1 34.622	1 44.479	1 54.335	2 4.192	2 14.048	2 23.905	2 33.761	37	.101
37	1 24.930	1 34.786	1 44.643	1 54.499	2 4.356	2 14.212	2 24.069	2 33.925	38	.104
38	1 25.094	1 34.951	1 44.807	1 54.664	2 4.520	2 14.377	2 24.233	2 34.090	39	.107
39	1 25.259	1 35.115	1 44.971	1 54.828	2 4.684	2 14.541	2 24.397	2 34.254	40	.110
40	1 25.423	1 35.279	1 45.136	1 54.992	2 4.849	2 14.705	2 24.562	2 34.418	41	.112
41	1 25.587	1 35.444	1 45.300	1 55.156	2 5.013	2 14.869	2 24.726	2 34.582	42	.115
42	1 25.751	1 35.608	1 45.464	1 55.321	2 5.177	2 15.034	2 24.890	2 34.747	43	.118
43	1 25.916	1 35.772	1 45.629	1 55.485	2 5.342	2 15.198	2 25.054	2 34.911	44	.120
44	1 26.080	1 35.936	1 45.793	1 55.649	2 5.506	2 15.362	2 25.219	2 35.075	45	.123
45	1 26.244	1 36.101	1 45.957	1 55.814	2 5.670	2 15.527	2 25.383	2 35.239	46	.126
46	1 26.408	1 36.265	1 46.121	1 55.978	2 5.834	2 15.691	2 25.547	2 35.404	47	.129
47	1 26.573	1 36.429	1 46.286	1 56.142	2 5.999	2 15.855	2 25.712	2 35.568	48	.131
48	1 26.737	1 36.593	1 46.450	1 56.306	2 6.163	2 16.019	2 25.876	2 35.732	49	.134
49	1 26.901	1 36.758	1 46.614	1 56.471	2 6.327	2 16.184	2 26.040	2 35.897	50	.137
50	1 27.066	1 36.922	1 46.778	1 56.635	2 6.491	2 16.348	2 26.204	2 36.061	51	.140
51	1 27.230	1 37.086	1 46.943	1 56.799	2 6.656	2 16.512	2 26.369	2 36.225	52	.142
52	1 27.394	1 37.251	1 47.107	1 56.964	2 6.820	2 16.676	2 26.533	2 36.389	53	.145
53	1 27.558	1 37.415	1 47.271	1 57.128	2 6.984	2 16.841	2 26.697	2 36.554	54	.148
54	1 27.723	1 37.579	1 47.436	1 57.292	2 7.149	2 17.005	2 26.861	2 36.718	55	.151
55	1 27.887	1 37.743	1 47.600	1 57.456	2 7.313	2 17.169	2 27.026	2 36.882	56	.153
56	1 28.051	1 37.908	1 47.764	1 57.621	2 7.477	2 17.334	2 27.190	2 37.047	57	.156
57	1 28.215	1 38.072	1 47.928	1 57.785	2 7.641	2 17.498	2 27.354	2 37.211	58	.159
58	1 28.380	1 38.236	1 48.093	1 57.949	2 7.806	2 17.662	2 27.519	2 37.375	59	0.162
59	1 28.544	1 38.400	1 48.257	1 58.113	2 7.970	2 17.826	2 27.683	2 37.539		

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.										
Mean Solar.	16 ^h .	17 ^h .	18 ^h .	19 ^h .	20 ^h .	21 ^h .	22 ^h .	23 ^h .	For Seconds.	
m	m	m	m	m	m	m	m	m	s	s
0	2 37.704	2 47.560	2 57.417	3 7.273	3 17.129	3 26.986	3 36.842	3 46.699		
1	2 37.868	2 47.724	2 57.581	3 7.437	3 17.294	3 27.150	3 37.007	3 46.863	1	0.003
2	2 38.032	2 47.889	2 57.745	3 7.602	3 17.458	3 27.315	3 37.171	3 47.027	2	.005
3	2 38.196	2 48.053	2 57.909	3 7.766	3 17.622	3 27.479	3 37.335	3 47.192	3	.008
4	2 38.361	2 48.217	2 58.074	3 7.930	3 17.787	3 27.643	3 37.500	3 47.356	4	.011
5	2 38.525	2 48.381	2 58.238	3 8.094	3 17.951	3 27.807	3 37.664	3 47.520	5	.014
6	2 38.689	2 48.546	2 58.402	3 8.259	3 18.115	3 27.972	3 37.828	3 47.685	6	.016
7	2 38.854	2 48.710	2 58.566	3 8.423	3 18.279	3 28.136	3 37.992	3 47.849	7	.019
8	2 39.018	2 48.874	2 58.731	3 8.587	3 18.444	3 28.300	3 38.157	3 48.013	8	.022
9	2 39.182	2 49.039	2 58.895	3 8.751	3 18.608	3 28.464	3 38.321	3 48.177	9	.025
10	2 39.346	2 49.203	2 59.059	3 8.916	3 18.772	3 28.629	3 38.485	3 48.342	10	.027
11	2 39.511	2 49.367	2 59.224	3 9.080	3 18.937	3 28.793	3 38.649	3 48.506	11	.030
12	2 39.675	2 49.531	2 59.388	3 9.244	3 19.101	3 28.957	3 38.814	3 48.670	12	.033
13	2 39.839	2 49.696	2 59.552	3 9.409	3 19.265	3 29.122	3 38.978	3 48.834	13	.036
14	2 40.003	2 49.860	2 59.716	3 9.573	3 19.429	3 29.286	3 39.142	3 48.999	14	.038
15	2 40.168	2 50.024	2 59.881	3 9.737	3 19.594	3 29.450	3 39.307	3 49.163	15	.041
16	2 40.332	2 50.188	3 0.045	3 9.901	3 19.758	3 29.614	3 39.471	3 49.327	16	.044
17	2 40.496	2 50.353	3 0.209	3 10.066	3 19.922	3 29.779	3 39.635	3 49.492	17	.047
18	2 40.661	2 50.517	3 0.373	3 10.230	3 20.086	3 29.943	3 39.799	3 49.656	18	.049
19	2 40.825	2 50.681	3 0.538	3 10.394	3 20.251	3 30.107	3 39.964	3 49.820	19	.052
20	2 40.989	2 50.846	3 0.702	3 10.559	3 20.415	3 30.271	3 40.128	3 49.984	20	.055
21	2 41.153	2 51.010	3 0.866	3 10.723	3 20.579	3 30.436	3 40.292	3 50.149	21	.057
22	2 41.318	2 51.174	3 1.031	3 10.887	3 20.744	3 30.600	3 40.456	3 50.313	22	.060
23	2 41.482	2 51.338	3 1.195	3 11.051	3 20.908	3 30.764	3 40.621	3 50.477	23	.063
24	2 41.646	2 51.503	3 1.359	3 11.216	3 21.072	3 30.929	3 40.785	3 50.642	24	.066
25	2 41.810	2 51.667	3 1.523	3 11.380	3 21.236	3 31.093	3 40.949	3 50.806	25	.068
26	2 41.975	2 51.831	3 1.688	3 11.544	3 21.401	3 31.257	3 41.114	3 50.970	26	.071
27	2 42.139	2 51.995	3 1.852	3 11.708	3 21.565	3 31.421	3 41.278	3 51.134	27	.074
28	2 42.303	2 52.160	3 2.016	3 11.873	3 21.729	3 31.586	3 41.442	3 51.299	28	.077
29	2 42.468	2 52.324	3 2.181	3 12.037	3 21.893	3 31.750	3 41.606	3 51.463	29	.079
30	2 42.632	2 52.488	3 2.345	3 12.201	3 22.058	3 31.914	3 41.771	3 51.627	30	.082
31	2 42.796	2 52.653	3 2.509	3 12.366	3 22.222	3 32.078	3 41.935	3 51.791	31	.085
32	2 42.960	2 52.817	3 2.673	3 12.530	3 22.386	3 32.243	3 42.099	3 51.956	32	.088
33	2 43.125	2 52.981	3 2.838	3 12.694	3 22.551	3 32.407	3 42.264	3 52.120	33	.090
34	2 43.289	2 53.145	3 3.002	3 12.858	3 22.715	3 32.571	3 42.428	3 52.284	34	.093
35	2 43.453	2 53.310	3 3.166	3 13.023	3 22.879	3 32.736	3 42.592	3 52.449	35	.096
36	2 43.617	2 53.474	3 3.330	3 13.187	3 23.043	3 32.900	3 42.756	3 52.613	36	.099
37	2 43.782	2 53.638	3 3.495	3 13.351	3 23.208	3 33.064	3 42.921	3 52.777	37	.101
38	2 43.946	2 53.803	3 3.659	3 13.515	3 23.372	3 33.228	3 43.085	3 52.941	38	.104
39	2 44.110	2 53.967	3 3.823	3 13.680	3 23.536	3 33.393	3 43.249	3 53.106	39	.107
40	2 44.275	2 54.131	3 3.988	3 13.844	3 23.700	3 33.557	3 43.413	3 53.270	40	.110
41	2 44.439	2 54.295	3 4.152	3 14.008	3 23.865	3 33.721	3 43.578	3 53.434	41	.112
42	2 44.603	2 54.460	3 4.316	3 14.173	3 24.029	3 33.886	3 43.742	3 53.598	42	.115
43	2 44.767	2 54.624	3 4.480	3 14.337	3 24.193	3 34.050	3 43.906	3 53.763	43	.118
44	2 44.932	2 54.788	3 4.645	3 14.501	3 24.358	3 34.214	3 44.071	3 53.927	44	.120
45	2 45.096	2 54.952	3 4.809	3 14.665	3 24.522	3 34.378	3 44.235	3 54.091	45	.123
46	2 45.260	2 55.117	3 4.973	3 14.830	3 24.686	3 34.543	3 44.399	3 54.256	46	.126
47	2 45.425	2 55.281	3 5.137	3 14.994	3 24.850	3 34.707	3 44.563	3 54.420	47	.129
48	2 45.589	2 55.445	3 5.302	3 15.158	3 25.015	3 34.871	3 44.728	3 54.584	48	.131
49	2 45.753	2 55.610	3 5.466	3 15.322	3 25.179	3 35.035	3 44.892	3 54.748	49	.134
50	2 45.917	2 55.774	3 5.630	3 15.487	3 25.343	3 35.200	3 45.056	3 54.913	50	.137
51	2 46.082	2 55.938	3 5.795	3 15.651	3 25.508	3 35.364	3 45.220	3 55.077	51	.140
52	2 46.246	2 56.102	3 5.959	3 15.815	3 25.672	3 35.528	3 45.385	3 55.241	52	.142
53	2 46.410	2 56.267	3 6.123	3 15.980	3 25.836	3 35.693	3 45.549	3 55.405	53	.145
54	2 46.574	2 56.431	3 6.287	3 16.144	3 26.000	3 35.857	3 45.713	3 55.570	54	.148
55	2 46.739	2 56.595	3 6.452	3 16.308	3 26.165	3 36.021	3 45.878	3 55.734	55	.151
56	2 46.903	2 56.759	3 6.616	3 16.472	3 26.329	3 36.185	3 46.042	3 55.898	56	.153
57	2 47.067	2 56.924	3 6.780	3 16.637	3 26.493	3 36.350	3 46.206	3 56.063	57	.156
58	2 47.232	2 57.088	3 6.944	3 16.801	3 26.657	3 36.514	3 46.370	3 56.227	58	.159
59	2 47.396	2 57.252	3 7.109	3 16.965	3 26.822	3 36.678	3 46.535	3 56.391	59	.162

SUPPLEMENT.

SUPPLEMENT TO THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC,

FOR THE YEARS

1878, 1879, 1880, and 1881.

TABLES FOR FINDING THE LATITUDE OF A PLACE BY ALTITUDES OF POLARIS.

The formula* on which these tables are based is

$$L = h - p \cos t + \frac{1}{2} p^2 \sin 1'' \sin^2 t \tan h \\ - \frac{1}{6} p^3 \sin^2 1'' \cos t \sin^2 t + \frac{1}{24} p^4 \sin^3 1'' \sin^4 t \tan^3 h;$$

in which

L = the latitude of the place, and

h = the true altitude,

p = the polar distance, and

t = the hour angle of the star.

Table A contains for the declination $88^\circ 40'$, or $p_0 = 1^\circ 20' = 4800''$, the *first correction*,

$$A = -p_0 \cos t - \frac{1}{2} p_0^2 \sin^2 1'' \cos t \sin^2 t;$$

Argument, *the hour angle of the star*, or 24^h — the hour angle.

Table B contains the *second correction*,

$$B = \frac{1}{2} p_0^2 \sin 1'' \sin^2 t \tan h + \frac{1}{6} p_0^4 \sin^3 1'' \sin^4 t \tan^3 h;$$

Arguments, *the true altitude of the star* and the *hour angle*, or 24^h — the hour angle. This correction is always *additive*.

Table C contains the *third correction*,

$$C = \frac{1}{2} (p^2 - p_0^2) \sin 1'' \sin^2 t \tan h;$$

Arguments, B and *the declination of the star* from $88^\circ 39' 20''$ to $88^\circ 41' 20''$.

Table D contains the *fourth correction*,

$$- (p - p_0) \cos t - \frac{1}{6} (p^3 - p_0^3) \sin^2 1'' \cos t \sin^2 t;$$

Arguments, A and *the declination of the star* from $88^\circ 39' 20''$ to $88^\circ 41' 20''$.

The quantities are given to the nearest $0''.1$: a . placed after some of them indicates a doubt between the figure given and the next highest, or that the correct value is $0''.05$ greater than that given. Thus, $3''.7$ indicates the actual value $3''.75$.

The method of using these tables is as follows:

Reduce the observed altitude of the star to the true altitude, and the noted time of the observation to the sidereal time of the place.

Find from the Ephemeris the apparent right ascension and declination of the star at the time of observation.†

* CHAUVENET'S *Spherical and Practical Astronomy*, Vol. I., p. 256.

† If great precision is aimed at, the tables in the Ephemeris may be interpolated for the hour angle at the prime meridian, i. e., the local hour angle + the longitude; (west longitudes being regarded as positive.) The solar date, with which to enter, will be one day *later* than the astronomical day of observation in the case of a *west* hour angle, which added to the mean time of culmination gives more than 24^h or 1^d ; and one day *earlier* in the case of an *east* hour angle, which is numerically greater than the mean time of culmination. In the American Ephemeris the mean time of culmination is given to tenths of a day.

LATITUDE BY ALTITUDES OF POLARIS.

Subtracting the right ascension from the sidereal time will give the star's hour angle west or +; subtracting the sidereal time from the right ascension will give the hour angle east or -. If it is more than 12^h, subtract it from 24^h and change the sign.

1. With this hour angle take out the *first correction*, *A*, from Table A, giving to it the sign - when the hour angle is numerically less than 6^h; the sign + when the hour angle is greater than 6^h.

2. With the hour angle and altitude take out the *second correction*,* *B*, from Table B. The sign of this correction is always +.

3. With *B* and the declination take out the *third correction*, *C*, from Table C, giving it the sign + when the declination is less than 88° 40'; - when the declination is greater than 88° 40'.

4. With *A* and the declination take out the *fourth correction*, *D*, from Table D, giving it the same sign as that of *A*, when the declination is less than 88° 40'; the opposite sign when the declination is greater than 88° 40'.

5. Combine these corrections with the true altitude according to their signs: the result is the latitude of the place of observation.

When great precision is required, or the intervals are great, it will be necessary to take out the *first* and *second corrections* for each observation separately; in other cases, the mean of the times may be used. The means of these two corrections may always be used for finding the *third* and *fourth corrections*; and these four quantities may be combined with the mean of the altitudes.

If the nearest 10'' suffices for each correction, they may be taken out with the nearest arguments without interpolation; and all but the *first* may be thus taken out when a precision of 3'' is required.

If a precision of 1' is sufficient for each correction, as is ordinarily the case at sea, an hour angle within 3^m will suffice for Table A; Tables C and D may be neglected, and Table B used only when the altitude exceeds 47°.

Example.—1881, November 10, 9^h 54^m 48.6, p. m., mean time, in longitude 25° West of Washington, suppose the corrected altitude of Polaris to be 25° 25' 25'', required the latitude of the place.

Local astronomical mean time,	November 10, 9 ^h 54 ^m 48.6
Reduction for 9 ^h 54 ^m 48.6, Appendix, Table III,	+ 0 1 37.7
Washington sidereal time of mean noon, (page 331),	15 19 58.1
Reduction for longitude (= + 1 ^h 40 ^m), Appendix, Table III,	+ 0 0 16.4
Sum equals local sidereal time,	1 16 40.8
Page 265, Polaris, app. decl. = + 88° 40' 59''.6	App. R. A. 1 16 30.8
Difference equals hour-angle,	+ 0 0 10.0

The local astronomical mean time of observation equals November 10.5, Washington mean time, for which epoch the apparent place of Polaris is interpolated.

Corrected altitude,	+ 25° 25' 25.0
Table A, corresponding to the hour-angle,	<i>A</i> = - 1 20 0.0
Table B, corresponding to the altitude and hour-angle,	<i>B</i> = 0 0 0.0
Table C, corresponding to the declination and <i>B</i> ,	<i>C</i> = 0 0 0.0
Table D, corresponding to the declination and <i>A</i> ,	<i>D</i> = + 0 0 59.6
Sum equals latitude,	+ 24 6 24.6

* If the altitude is greater than 60°, this correction may be found by taking that for 45° and multiplying it by the tangent of the altitude; adding, if desirable, the second term in the expression for *B*, viz: + 0''.0076 sin² *t* tan² *h*.

TABLE A.

FOR FINDING THE LATITUDE OF A PLACE BY ALTITUDES OF POLARIS.

A = 1st Correction. Argument, the star's hour angle, (or 24^h — the star's hour angle.)

	0 ^h	1 ^h	2 ^h	3 ^h	4 ^h	5 ^h	
0	-1 20 0.0	-1 17 16.5	-1 9 17.1	-0 56 34.4	-0 40 0.3	-0 20 42.5	60
1	19 59.9	17 11.0	9 6.6	56 19.6	39 42.2	20 22.3	59
2	19 59.8	17 5.5	8 56.0	56 4.7	39 24.0	20 2.0	58
3	19 59.6	16 59.8	8 45.3	55 49.7	39 5.7	19 41.7	57
4	19 59.3	16 54.1	8 34.6	55 34.7	38 47.4	19 21.4	56
5	-1 19 58.9	-1 16 48.3	-1 8 23.8	-0 55 19.6	-0 38 29.1	-0 19 1.1	55
6	19 58.4	16 42.4	8 12.9	55 4.4	38 10.7	18 40.7	54
7	19 57.8	16 36.4	8 1.9	54 49.2	37 52.2	18 20.3	53
8	19 57.1	16 30.3	7 50.8	54 33.9	37 33.8	17 59.9	52
9	19 56.3	16 24.2	7 39.7	54 18.6	37 15.3	17 39.5	51
10	-1 19 55.4	-1 16 17.9	-1 7 28.5	-0 54 3.1	-0 36 56.7	-0 17 19.1	50
11	19 54.5	16 11.6	7 17.2	53 47.7	36 38.1	16 58.6	49
12	19 53.4	16 5.1	7 5.8	53 32.1	36 19.5	16 38.1	48
13	19 52.3	15 58.6	6 54.4	53 16.5	36 0.8	16 17.6	47
14	19 51.0	15 52.0	6 42.9	53 0.9	35 42.0	15 57.1	46
15	-1 19 49.7	-1 15 45.3	-1 6 31.3	-0 52 45.2	-0 35 23.3	-0 15 36.6	45
16	19 48.3	15 38.6	6 19.6	52 29.4	35 4.5	15 16.0	44
17	19 46.8	15 31.7	6 7.8	52 13.6	34 45.6	14 55.5	43
18	19 45.2	15 24.8	5 56.0	51 57.7	34 26.8	14 34.9	42
19	19 43.5	15 17.7	5 44.1	51 41.7	34 7.8	14 14.3	41
20	-1 19 41.7	-1 15 10.6	-1 5 32.2	-0 51 25.7	-0 33 48.9	-0 13 53.7	40
21	19 39.9	15 3.4	5 20.1	51 9.6	33 29.9	13 33.0	39
22	19 37.9	14 56.1	5 8.0	50 53.5	33 10.8	13 12.4	38
23	19 35.9	14 48.7	4 55.8	50 37.3	32 51.7	12 51.7	37
24	19 33.7	14 41.3	4 43.5	50 21.1	32 32.6	12 31.0	36
25	-1 19 31.5	-1 14 33.7	-1 4 31.2	-0 50 4.8	-0 32 13.5	-0 12 10.3	35
26	19 29.1	14 26.1	4 18.8	49 48.4	31 54.3	11 49.6	34
27	19 26.7	14 18.4	4 6.3	49 32.0	31 35.1	11 28.9	33
28	19 24.2	14 10.6	3 53.7	49 15.5	31 15.8	11 8.1	32
29	19 21.6	14 2.7	3 41.1	48 59.0	30 56.5	10 47.4	31
30	-1 19 18.9	-1 13 54.7	-1 3 28.3	-0 48 42.4	-0 30 37.2	-0 10 26.6	30
31	19 16.2	13 46.7	3 15.6	48 25.7	30 17.8	10 5.9	29
32	19 13.3	13 38.5	3 2.7	48 9.0	29 58.4	9 45.1	28
33	19 10.3	13 30.3	2 49.8	47 52.3	29 38.9	9 24.3	27
34	19 7.3	13 22.0	2 36.8	47 35.5	29 19.5	9 3.5	26
35	-1 19 4.1	-1 13 13.6	-1 2 23.7	-0 47 18.6	-0 29 0.0	-0 8 42.6	25
36	19 0.9	13 5.1	2 10.6	47 1.7	28 40.4	8 21.8	24
37	18 57.6	12 56.6	1 57.4	46 44.7	28 20.9	8 1.0	23
38	18 54.2	12 47.9	1 44.1	46 27.7	28 1.3	7 40.1	22
39	18 50.7	12 39.2	1 30.7	46 10.6	27 41.6	7 19.3	21
40	-1 18 47.1	-1 12 30.4	-1 1 17.3	-0 45 53.5	-0 27 22.0	-0 6 58.4	20
41	18 43.4	12 21.5	1 3.8	45 36.3	27 2.3	6 37.6	19
42	18 39.6	12 12.6	0 50.2	45 19.1	26 42.5	6 16.7	18
43	18 35.8	12 3.5	0 36.6	45 1.8	26 22.8	5 55.8	17
44	18 31.8	11 54.4	0 22.9	44 44.5	26 3.0	5 34.9	16
45	-1 18 27.8	-1 11 45.1	-1 0 9.1	-0 44 27.1	-0 25 43.2	-0 5 14.0	15
46	18 23.7	11 35.8	-0 59 55.3	44 9.6	25 23.3	4 53.1	14
47	18 19.4	11 26.5	59 41.4	43 52.1	25 3.4	4 32.2	13
48	18 15.1	11 17.0	59 27.4	43 34.6	24 43.5	4 11.3	12
49	18 10.8	11 7.4	59 13.3	43 17.0	24 23.6	3 50.3	11
50	-1 18 6.3	-1 10 57.8	-0 58 59.2	-0 42 59.4	-0 24 3.6	-0 3 29.4	10
51	18 1.7	10 48.1	58 45.0	42 41.7	23 43.6	3 8.5	9
52	17 57.0	10 38.3	58 30.8	42 23.9	23 23.6	2 47.5	8
53	17 52.3	10 28.4	58 16.5	42 6.1	23 3.6	2 26.6	7
54	17 47.4	10 18.5	58 2.1	41 48.3	22 43.5	2 5.7	6
	8.5	8.5	57 47.6	41 30.4	22 23.4	1 44.7	5
	58.4	58.4	57 33.1	41 12.5	22 3.3	1 23.8	4
	48.2	48.2	57 18.5	40 54.5	21 43.1	1 2.8	3
	37.9	37.9	57 3.9	40 36.5	21 23.0	0 41.9	2
	27.5	27.5	56 49.2	40 18.4	21 2.8	0 20.9	1
	17.1	17.1	56 34.4	40 0.3	20 42.5	0 0.0	0
	10 ^h	2 ^h	4 ^h	6 ^h			

Change the sign to + when the argument is found at the bottom.

TABLE B.

FOR FINDING THE LATITUDE OF A PLACE BY ALTITUDES OF POLARIS.

B = the 2d correction. This correction is always additive.

Star's Hour Angle.	STAR'S ALTITUDE.										Star's Hour Angle.
	10°	15°	16°	17°	18°	19°	20°	21°	22°	23°	
h m	"	"	"	"	"	"	"	"	"	"	h m
0 0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12 0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11 50
20	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	40
30	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	30
40	0.3	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7	20
50	0.5	0.7	0.7	0.8	0.8	0.9	0.9	1.0	1.0	1.1	10
1 0	0.6	1.0	1.1	1.1	1.2	1.3	1.4	1.4	1.5	1.6	0
10	0.9	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	10 50
20	1.1	1.7	1.9	2.0	2.1	2.2	2.4	2.5	2.6	2.8	40
30	1.4	2.2	2.3	2.5	2.7	2.8	3.0	3.1	3.3	3.5	30
40	1.8	2.7	2.9	3.0	3.2	3.4	3.6	3.8	4.0	4.2	20
50	2.1	3.2	3.4	3.6	3.9	4.1	4.3	4.6	4.8	5.0	10
2 0	2.5	3.7	4.0	4.3	4.5	4.8	5.1	5.4	5.6	5.9	0
10	2.8	4.3	4.6	4.9	5.2	5.5	5.9	6.2	6.5	6.8	9 50
20	3.2	4.9	5.3	5.6	6.0	6.3	6.7	7.0	7.4	7.8	40
30	3.6	5.5	5.9	6.3	6.7	7.1	7.5	7.9	8.4	8.8	30
40	4.1	6.2	6.6	7.0	7.5	7.9	8.4	8.9	9.3	9.8	20
50	4.5	6.8	7.3	7.8	8.3	8.8	9.3	9.8	10.3	10.8	10
3 0	4.9	7.5	8.0	8.5	9.1	9.6	10.2	10.7	11.3	11.8	0
10	5.3	8.1	8.7	9.3	9.8	10.4	11.0	11.6	12.3	12.9	8 50
20	5.8	8.8	9.4	10.0	10.6	11.3	11.9	12.6	13.2	13.9	40
30	6.2	9.4	10.1	10.7	11.4	12.1	12.8	13.5	14.2	14.9	30
40	6.6	10.0	10.7	11.4	12.2	12.9	13.6	14.4	15.1	15.9	20
50	7.0	10.6	11.4	12.1	12.9	13.7	14.5	15.2	16.0	16.9	10
4 0	7.4	11.2	12.0	12.8	13.6	14.4	15.2	16.1	16.9	17.8	0
10	7.7	11.8	12.6	13.4	14.3	15.1	16.0	16.9	17.7	18.6	7 50
20	8.1	12.3	13.1	14.0	14.9	15.8	16.7	17.6	18.5	19.5	40
30	8.4	12.8	13.7	14.6	15.5	16.4	17.3	18.3	19.3	20.2	30
40	8.7	13.2	14.1	15.1	16.0	17.0	17.9	18.9	19.9	20.9	20
50	9.0	13.6	14.6	15.5	16.5	17.5	18.5	19.5	20.5	21.6	10
5 0	9.2	14.0	14.9	15.9	16.9	17.9	19.0	20.0	21.1	22.1	0
10	9.4	14.3	15.3	16.3	17.3	18.3	19.4	20.4	21.5	22.6	6 50
20	9.6	14.5	15.5	16.6	17.6	18.6	19.7	20.8	21.9	23.0	40
30	9.7	14.7	15.7	16.8	17.8	18.9	20.0	21.1	22.2	23.3	30
40	9.8	14.8	15.9	16.9	18.0	19.1	20.2	21.3	22.4	23.5	20
50	9.8	14.9	16.0	17.0	18.1	19.2	20.3	21.4	22.5	23.7	10
6 0	9.8	15.0	16.0	17.1	18.1	19.2	20.3	21.4	22.6	23.7	0

TABLE C.

C = the 3d correction. Hor. Arg., the star's declination. Vert. Arg., *B* = the 2d correction.

B.	SS° 39'				SS° 40'						SS° 41'		
	20"	30"	40"	50"	0"	10"	20"	30"	40"	50"	0"	10"	20"
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	+0.2	+0.1	+0.1	+0.0	0.0	-0.0	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3
20	0.3	0.2	0.2	0.1	0.0	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.7
30	0.5	0.4	0.2	0.1	0.0	0.1	0.2	0.4	0.5	0.6	0.7	0.9	1.0
40	0.7	0.5	0.3	0.2	0.0	0.2	0.3	0.5	0.7	0.8	1.0	1.2	1.3
50	+0.8	+0.6	+0.4	+0.2	0.0	-0.2	-0.4	-0.6	-0.8	-1.0	-1.2	-1.4	-1.7

NOTE.—Below 15° *B* is nearly proportional to the altitude.

TABLE B.

FOR FINDING THE LATITUDE OF A PLACE BY ALTITUDES OF POLARIS.

B = the 2d correction. This correction is always additive.

Star's Hour	STAR'S ALTITUDE.										Star's Hour
Angle.	24°	25°	26°	27°	28°	29°	30°	31°	32°	33°	Angle.
h m	"	"	"	"	"	"	"	"	"	"	h m
0 0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12 0
10	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	11 50
20	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	40
30	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	30
40	0.7	0.8	0.8	0.9	0.9	0.9	1.0	1.0	1.0	1.1	20
50	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.6	1.6	1.7	10
1 0	1.7	1.7	1.8	1.9	2.0	2.1	2.2	2.2	2.3	2.4	0
10	2.2	2.3	2.5	2.6	2.7	2.8	2.9	3.0	3.2	3.3	10 50
20	2.9	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	40
30	3.6	3.8	4.0	4.2	4.3	4.5	4.7	4.9	5.1	5.3	30
40	4.4	4.7	4.9	5.1	5.3	5.5	5.8	6.0	6.2	6.5	20
50	5.3	5.5	5.8	6.1	6.3	6.6	6.9	7.1	7.4	7.7	10
2 0	6.2	6.5	6.8	7.1	7.4	7.7	8.1	8.4	8.7	9.1	0
10	7.2	7.5	7.9	8.2	8.6	8.9	9.3	9.7	10.1	10.5	9 50
20	8.2	8.6	9.0	9.4	9.8	10.2	10.6	11.0	11.5	11.9	40
30	9.2	9.7	10.1	10.5	11.0	11.5	11.9	12.4	12.9	13.4	30
40	10.3	10.8	11.2	11.8	12.3	12.8	13.3	13.9	14.4	15.0	20
50	11.3	11.9	12.4	13.0	13.5	14.1	14.7	15.3	15.9	16.6	10
3 0	12.4	13.0	13.6	14.2	14.8	15.5	16.1	16.8	17.5	18.1	0
10	13.5	14.1	14.8	15.5	16.1	16.8	17.5	18.2	19.0	19.7	8 50
20	14.6	15.3	16.0	16.7	17.4	18.2	18.9	19.7	20.5	21.3	40
30	15.6	16.4	17.1	17.9	18.7	19.5	20.3	21.1	22.0	22.8	30
40	16.7	17.5	18.3	19.1	19.9	20.8	21.6	22.5	23.4	24.3	20
50	17.7	18.5	19.4	20.2	21.1	22.0	22.9	23.9	24.8	25.8	10
4 0	18.6	19.5	20.4	21.3	22.3	23.2	24.2	25.2	26.2	27.2	0
10	19.6	20.5	21.4	22.4	23.4	24.3	25.4	26.4	27.5	28.5	7 50
20	20.4	21.4	22.4	23.4	24.4	25.4	26.5	27.6	28.7	29.8	40
30	21.2	22.2	23.2	24.3	25.3	26.4	27.5	28.6	29.8	31.0	30
40	22.0	23.0	24.1	25.1	26.2	27.3	28.5	29.6	30.8	32.0	20
50	22.6	23.7	24.8	25.9	27.0	28.2	29.3	30.5	31.7	33.0	10
5 0	23.2	24.3	25.4	26.5	27.7	28.9	30.1	31.3	32.6	33.8	0
10	23.7	24.8	26.0	27.1	28.3	29.5	30.7	32.0	33.3	34.6	6 50
20	24.1	25.3	26.4	27.6	28.8	30.0	31.3	32.5	33.8	35.2	40
30	24.4	25.6	26.8	28.0	29.2	30.4	31.7	33.0	34.3	35.6	30
40	24.7	25.8	27.0	28.2	29.5	30.7	32.0	33.3	34.6	36.0	20
50	24.8	26.0	27.2	28.4	29.6	30.9	32.2	33.5	34.8	36.2	10
6 0	24.9	26.0	27.2	28.5	29.7	31.0	32.2	33.6	34.9	36.3	0

TABLE C.

C = the 3d correction. Hor. Arg., the star's declination. Vert. Arg., B = the 2d correction.

B.	88° 30'				88° 40'						88° 41'		
	20"	30"	40"	50"	0"	10"	20"	30"	40"	50"	0"	10"	20"
"	"	"	"	"	"	"	"	"	"	"	"	"	"
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	+0.2	+0.1	+0.1	+0.0	0.0	-0.0	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3
20	0.3	0.2	0.2	0.1	0.0	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.7
30	0.5	0.4	0.2	0.1	0.0	0.1	0.2	0.4	0.5	0.6	0.7	0.9	1.0
40	0.7	0.5	0.3	0.2	0.0	0.2	0.3	0.5	0.7	0.8	1.0	1.2	1.3
50	+0.8	+0.6	+0.4	+0.2	0.0	-0.2	-0.4	-0.6	-0.8	-1.0	-1.2	-1.4	-1.7

NOTE.—Below 15° B is nearly proportional to the altitude.

TABLE B.

FOR FINDING THE LATITUDE OF A PLACE BY ALTITUDES OF POLARIS.

B = the 2d correction. This correction is always additive.

Star's Hour Angle.	STAR'S ALTITUDE.										Star's Hour Angle.
	34°	35°	36°	37°	38°	39°	40°	41°	42°	43°	
h m	"	"	"	"	"	"	"	"	"	"	h m
0 0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13 0
10	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	11 50
20	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	40
30	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.9	0.9	30
40	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.5	1.6	20
50	1.8	1.8	1.9	2.0	2.0	2.1	2.2	2.3	2.4	2.4	10
1 0	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.3	3.4	3.5	0
10	3.4	3.5	3.7	3.8	3.9	4.1	4.2	4.4	4.5	4.7	10 50
20	4.4	4.6	4.7	4.9	5.1	5.3	5.5	5.7	5.9	6.1	40
30	5.5	5.7	5.9	6.2	6.4	6.6	6.9	7.1	7.4	7.6	30
40	6.7	7.0	7.2	7.5	7.8	8.1	8.4	8.7	9.0	9.3	20
50	8.0	8.3	8.6	9.0	9.3	9.6	10.0	10.3	10.7	11.1	10
2 0	9.4	9.8	10.1	10.5	10.9	11.3	11.7	12.1	12.6	13.0	0
10	10.9	11.3	11.7	12.1	12.6	13.1	13.5	14.0	14.5	15.0	0 50
20	12.4	12.9	13.3	13.8	14.4	14.9	15.4	16.0	16.5	17.1	40
30	14.0	14.5	15.0	15.6	16.2	16.8	17.4	18.0	18.6	19.3	30
40	15.6	16.2	16.8	17.4	18.0	18.7	19.4	20.0	20.8	21.5	20
50	17.2	17.8	18.5	19.2	19.9	20.6	21.4	22.2	22.9	23.8	10
3 0	18.8	19.6	20.3	21.0	21.8	22.6	23.4	24.3	25.1	26.0	0
10	20.5	21.8	22.1	22.9	23.7	24.6	25.5	26.4	27.3	28.3	0 50
20	22.1	23.0	23.8	24.7	25.6	26.5	27.5	28.5	29.5	30.6	40
30	23.7	24.6	25.5	26.5	27.5	28.5	29.5	30.6	31.7	32.8	30
40	25.3	26.2	27.2	28.2	29.3	30.4	31.4	32.6	33.7	34.9	20
50	26.8	27.8	28.9	29.9	31.0	32.2	33.3	34.5	35.8	37.0	10
4 0	28.2	29.3	30.4	31.6	32.7	33.9	35.1	36.4	37.7	39.1	0
10	29.6	30.8	31.9	33.1	34.3	35.6	36.9	38.2	39.6	41.0	0 50
20	30.9	32.1	33.3	34.6	35.8	37.2	38.5	39.9	41.3	42.8	40
30	32.2	33.4	34.6	35.9	37.2	38.6	40.0	41.4	42.9	44.5	30
40	33.3	34.5	35.8	37.2	38.5	39.9	41.4	42.9	44.4	46.0	20
50	34.3	35.6	36.9	38.3	39.7	41.1	42.6	44.2	45.7	47.4	10
5 0	35.1	36.5	37.9	39.3	40.7	42.2	43.7	45.3	46.9	48.6	0
10	35.9	37.3	38.7	40.1	41.6	43.1	44.7	46.3	47.9	49.6	0 50
20	36.5	37.9	39.3	40.8	42.3	43.9	45.4	47.1	48.8	50.5	40
30	37.0	38.4	39.9	41.4	42.9	44.5	46.1	47.7	49.4	51.2	30
40	37.4	38.8	40.3	41.8	43.3	44.9	46.5	48.2	49.9	51.7	20
50	37.6	39.0	40.5	42.0	43.5	45.1	46.8	48.5	50.2	52.0	10
6 0	37.7	39.1	40.6	42.1	43.6	45.2	46.9	48.5	50.3	52.1	0

TABLE C.

C = the 3d correction. Hor. Arg., the star's declination. Vert. Arg., *B* = the 2d correction.

<i>B.</i>	88° 39'				88° 40'						88° 41'		
	20"	30"	40"	50"	0"	10"	20"	30"	40"	50"	0"	10"	20"
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	+0.2	+0.1	+0.1	+0.0	0.0	-0.0	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3
20	0.3	0.2	0.2	0.1	0.0	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.7
30	0.5	0.4	0.2	0.1	0.0	0.1	0.2	0.4	0.5	0.6	0.7	0.9	1.0
40	0.7	0.5	0.3	0.2	0.0	0.2	0.3	0.5	0.7	0.8	1.0	1.2	1.3
50	+0.8	+0.6	+0.4	+0.2	0.0	-0.2	-0.4	-0.6	-0.8	-1.0	-1.2	-1.4	-1.7

TABLE B.

FOR FINDING THE LATITUDE OF A PLACE BY ALTITUDES OF POLARIS.

B = the 2d correction. This correction is always additive.

Star's Hour		STAR'S ALTITUDE										Star's Hour
Angle.		44°	45°	46°	47°	48°	49°	50°	51°	52°	Angle.	
h m											h m	
0 0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12 0	
10	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	11 50	
20	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	40	
30	0.9	0.9	0.9	1.0	1.0	1.1	1.1	1.1	1.2	1.2	30	
40	1.6	1.7	1.7	1.7	1.8	1.9	1.9	2.0	2.1	2.2	20	
50	2.5	2.6	2.7	2.7	2.8	2.9	3.0	3.1	3.2	3.4	10	
1 0	3.6	3.7	3.9	4.0	4.2	4.3	4.5	4.6	4.8		0	
10	4.9	5.0	5.2	5.4	5.6	5.8	6.0	6.2	6.5		10 50	
20	6.3	6.5	6.8	7.0	7.3	7.5	7.8	8.1	8.4		40	
30	7.9	8.2	8.5	8.8	9.1	9.4	9.8	10.1	10.5		30	
40	9.6	10.0	10.3	10.7	11.1	11.5	11.9	12.3	12.8		20	
50	11.5	11.9	12.3	12.8	13.2	13.7	14.2	14.7	15.2		10	
2 0	13.5	14.0	14.5	15.0	15.5	16.1	16.6	17.2	17.9		0	
10	15.6	16.1	16.7	17.3	17.9	18.5	19.2	19.9	20.6		9 50	
20	17.7	18.4	19.0	19.7	20.4	21.1	21.9	22.7	23.5		40	
30	20.0	20.7	21.4	22.2	23.0	23.8	24.7	25.6	26.5		30	
40	22.3	23.1	23.9	24.7	25.6	26.5	27.5	28.5	29.5		20	
50	24.6	25.5	26.4	27.3	28.3	29.3	30.4	31.5	32.6		10	
3 0	27.0	27.9	28.9	29.9	31.0	32.1	33.3	34.5	35.7		0	
10	29.3	30.4	31.4	32.6	33.7	34.9	36.2	37.5	38.9		8 50	
20	31.6	32.8	33.9	35.2	36.4	37.7	39.1	40.5	42.0		40	
30	33.9	35.1	36.4	37.7	39.0	40.4	41.9	43.4	45.0		30	
40	36.2	37.5	38.8	40.2	41.6	43.1	44.7	46.3	48.0		20	
50	38.4	39.7	41.1	42.6	44.1	45.7	47.3	49.1	50.9		10	
4 0	40.4	41.9	43.4	44.9	46.5	48.2	49.9	51.7	53.6		0	
10	42.4	43.9	45.5	47.1	48.8	50.6	52.4	54.3	56.2		7 50	
20	44.3	45.9	47.5	49.2	51.0	52.8	54.7	56.7	58.7		40	
30	46.0	47.7	49.4	51.1	52.9	54.8	56.8	58.9	61.0		30	
40	47.6	49.3	51.1	52.9	54.8	56.7	58.8	60.9	63.1		20	
50	49.1	50.8	52.6	54.5	56.4	58.4	60.5	62.7	65.0		10	
5 0	50.3	52.1	54.0	55.9	57.9	60.0	62.1	64.4	66.7		0	
10	51.4	53.2	55.1	57.1	59.1	61.3	63.4	65.7	68.1		6 50	
20	52.3	54.2	56.1	58.1	60.2	62.3	64.6	66.9	69.3		40	
30	53.0	54.9	56.9	58.9	61.0	63.2	65.4	67.8	70.3		30	
40	53.5	55.4	57.4	59.4	61.6	63.8	66.1	68.5	71.0		20	
50	53.8	55.7	57.7	59.8	61.9	64.1	66.4	68.8	71.4		10	
6 0	53.9	55.9	57.8	59.9	62.0	64.3	66.6	69.0	71.5		0	

TABLE C.

C = the 3d correction. Hor. Arg., the star's declination. Vert. Arg., *B* = the 2d correction.

B.	88° 39'				88° 40'						88° 41''		
	20''	30''	40''	50''	0''	10''	20''	30''	40''	50''	0''	10''	20''
30	+0.5	+0.4	+0.2	+0.1	0.0	-0.1	-0.2	-0.4	-0.5	-0.6	-0.7	-0.9	-1.0
40	0.7	0.5	0.3	0.2	0.0	0.2	0.3	0.5	0.7	0.8	1.0	1.1	1.3
50	0.8	0.6	0.4	0.2	0.0	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6
60	1.0	0.7	0.5	0.2	0.0	0.2	0.5	0.7	1.0	1.2	1.5	1.7	2.0
70	1.2	0.9	0.6	0.3	0.0	0.3	0.6	0.9	1.2	1.4	1.7	2.0	2.3
80	+1.3	+1.0	+0.7	+0.4	0.0	-0.4	-0.7	-1.0	-1.3	-1.6	-2.0	-2.3	-2.6

TABLE B.

FOR FINDING THE LATITUDE OF A PLACE BY ALTITUDES OF POLARIS.

B = the 2d correction. This correction is always additive.

Star's Hour	STAR'S ALTITUDE									Star's Hour
	Angle.	53°	54°	55°	56°	57°	58°	59°	60°	Angle.
h m	° "	° "	° "	° "	° "	° "	° "	° "	° "	h m
0 0	0 0.0 0.1	0 0.0 0.1	0 0.0 0.1	0 0.0 0.1	0 0.0 0.2	0 0.0 0.2	0 0.0 0.2	0 0.0 0.2	0 0.0 0.2	12 0
10	0 0.1 0.5	0 0.1 0.5	0 0.1 0.5	0 0.1 0.5	0 0.2 0.4	0 0.2 0.5	0 0.2 0.5	0 0.2 0.5	0 0.2 0.5	11 50
20	0 0.6 0.7	0 0.6 0.7	0 0.6 0.7	0 0.6 0.8	0 0.6 0.8	0 0.6 0.8	0 0.7 0.8	0 0.7 0.8	0 0.7 0.9	40
30	0 1.3 0.9	0 1.3 1.0	0 1.4 1.0	0 1.4 1.1	0 1.5 1.1	0 1.5 1.2	0 1.5 1.2	0 1.6 1.2	0 1.6 1.3	30
40	0 2.2 1.3	0 2.3 1.3	0 2.4 1.3	0 2.5 1.4	0 2.6 1.4	0 2.7 1.5	0 2.7 1.5	0 2.8 1.5	0 2.9 1.6	20
50	0 3.5 1.5	0 3.6 1.5	0 3.7 1.6	0 3.9 1.6	0 4.0 1.8	0 4.2 1.8	0 4.3 1.9	0 4.5 2.0	0 4.5 2.0	10
1 0	0 5.0 1.5	0 5.1 1.5	0 5.3 1.6	0 5.5 1.6	0 5.8 1.8	0 6.0 1.8	0 6.2 1.9	0 6.5 2.0	0 6.5 2.0	0
10	0 6.7 1.7	0 6.9 1.8	0 7.2 1.9	0 7.5 2.0	0 7.8 2.0	0 8.1 2.1	0 8.4 2.2	0 8.7 2.3	0 8.7 2.3	10 50
20	0 8.7 2.0	0 9.0 2.1	0 9.3 2.2	0 9.7 2.3	0 10.1 2.4	0 10.4 2.4	0 10.9 2.5	0 11.3 2.6	0 11.3 2.6	40
30	0 10.8 2.2	0 11.3 2.3	0 11.7 2.4	0 12.1 2.5	0 12.6 2.6	0 13.1 2.7	0 13.6 2.7	0 14.2 2.9	0 14.2 2.9	30
40	0 13.2 2.3	0 13.7 2.4	0 14.2 2.5	0 14.8 2.6	0 15.4 2.7	0 16.0 2.9	0 16.6 3.0	0 17.3 3.1	0 17.3 3.1	20
50	0 15.8 2.6	0 16.4 2.7	0 17.0 2.8	0 17.6 2.8	0 18.3 2.9	0 19.1 3.1	0 19.8 3.2	0 20.6 3.3	0 20.6 3.3	10
2 0	0 18.5 2.7	0 19.2 2.8	0 19.9 2.9	0 20.7 3.1	0 21.5 3.2	0 22.3 3.3	0 23.2 3.4	0 24.2 3.6	0 24.2 3.6	0
10	0 21.4 2.9	0 22.2 3.0	0 23.0 3.1	0 23.9 3.2	0 24.8 3.3	0 25.8 3.4	0 26.8 3.6	0 27.9 3.7	0 27.9 3.7	9 50
20	0 24.4 3.0	0 25.3 3.2	0 26.2 3.2	0 27.2 3.3	0 28.3 3.5	0 29.4 3.7	0 30.6 3.8	0 31.8 4.1	0 31.8 4.1	40
30	0 27.5 3.1	0 28.5 3.2	0 29.6 3.4	0 30.7 3.5	0 31.9 3.6	0 33.1 3.7	0 34.4 3.8	0 35.9 4.1	0 35.9 4.1	30
40	0 30.6 3.2	0 31.8 3.3	0 33.0 3.4	0 34.2 3.6	0 35.5 3.8	0 36.9 3.9	0 38.4 4.0	0 40.0 4.2	0 40.0 4.2	20
50	0 33.8 3.3	0 35.1 3.3	0 36.4 3.4	0 37.8 3.6	0 39.3 3.7	0 40.8 3.9	0 42.4 4.1	0 44.2 4.2	0 44.2 4.2	10
3 0	0 37.1 3.3	0 38.4 3.3	0 39.9 3.5	0 41.4 3.6	0 43.0 3.7	0 44.7 3.9	0 46.5 4.1	0 48.4 4.2	0 48.4 4.2	0
10	0 40.3 3.2	0 41.8 3.4	0 43.4 3.5	0 45.0 3.6	0 46.8 3.8	0 48.6 3.9	0 50.5 4.0	0 52.6 4.2	0 52.6 4.2	8 50
20	0 43.5 3.2	0 45.1 3.3	0 46.8 3.4	0 48.6 3.6	0 50.5 3.6	0 52.5 3.8	0 54.6 3.9	0 56.8 4.1	0 56.8 4.1	40
30	0 46.7 3.0	0 48.4 3.2	0 50.2 3.3	0 52.1 3.5	0 54.1 3.6	0 56.3 3.8	0 58.5 3.9	0 60.9 4.0	0 60.9 4.0	30
40	0 49.7 3.0	0 51.6 3.2	0 53.5 3.3	0 55.6 3.5	0 57.7 3.6	0 59.9 3.7	0 62.2 3.9	0 64.6 4.0	0 64.6 4.0	20
50	0 52.7 2.9	0 54.7 3.0	0 56.7 3.2	0 58.9 3.3	0 61.2 3.5	0 63.6 3.6	0 66.1 3.7	0 68.7 3.9	0 68.7 3.9	10
4 0	0 55.6 2.9	0 57.7 3.0	0 59.8 3.2	0 62.1 3.3	0 64.5 3.3	0 67.0 3.4	0 69.7 3.6	0 72.6 3.8	0 72.6 3.8	0
10	0 58.3 2.7	0 60.5 2.8	0 62.8 3.0	0 65.2 3.0	0 67.7 3.2	0 70.3 3.3	0 73.1 3.4	0 76.1 3.5	0 76.1 3.5	7 50
20	0 60.9 2.4	0 63.1 2.5	0 65.5 2.7	0 68.0 2.7	0 70.6 2.9	0 73.4 3.1	0 76.3 3.3	0 79.4 3.4	0 79.4 3.4	40
30	0 63.3 2.2	0 65.6 2.3	0 68.1 2.4	0 70.7 2.6	0 73.4 2.8	0 76.3 2.9	0 79.4 3.1	0 82.6 3.2	0 82.6 3.2	30
40	0 65.5 1.9	0 67.9 2.0	0 70.4 2.1	0 73.1 2.3	0 75.9 2.4	0 78.9 2.6	0 82.1 2.7	0 85.5 2.8	0 85.5 2.8	20
50	0 67.7 1.8	0 70.1 1.9	0 72.6 2.0	0 75.3 2.2	0 78.1 2.3	0 81.1 2.5	0 84.3 2.6	0 87.7 2.7	0 87.7 2.7	10
5 0	0 69.2 1.8	0 71.7 1.8	0 74.4 1.9	0 77.3 2.0	0 80.3 2.1	0 83.4 2.3	0 86.7 2.4	0 90.1 2.5	0 90.1 2.5	0
10	0 71.7 1.5	0 74.3 1.6	0 77.0 1.7	0 79.9 1.8	0 82.9 1.9	0 86.1 2.1	0 89.5 2.2	0 93.0 2.3	0 93.0 2.3	6 50
20	0 74.1 1.2	0 76.8 1.3	0 79.6 1.4	0 82.5 1.5	0 85.6 1.6	0 88.8 1.8	0 92.2 1.9	0 95.7 2.0	0 95.7 2.0	40
30	0 76.3 1.0	0 79.1 1.1	0 82.0 1.2	0 85.0 1.3	0 88.1 1.4	0 91.3 1.6	0 94.7 1.7	0 98.2 1.8	0 98.2 1.8	30
40	0 78.4 0.7	0 81.3 0.8	0 84.3 0.9	0 87.4 1.0	0 90.6 1.1	0 93.9 1.3	0 97.4 1.4	0 101.0 1.5	0 101.0 1.5	20
50	0 80.5 0.4	0 83.5 0.5	0 86.6 0.6	0 89.8 0.7	0 93.1 0.8	0 96.5 1.0	0 100.0 1.1	0 103.6 1.2	0 103.6 1.2	10
6 0	0 82.6 0.1	0 85.7 0.2	0 88.9 0.3	0 92.2 0.4	0 95.6 0.5	0 99.1 0.7	0 102.7 0.8	0 106.4 0.9	0 106.4 0.9	0

TABLE C.

C = the 3d correction. Hor. Arg., the star's declination. Vert. Arg., *B* = the 2d correction.

B.	88° 39'				88° 40'						88° 41'		
	20"	30"	40"	50"	0"	10"	20"	30"	40"	50"	0"	10"	20"
1 0	+1.0	+0.7	+0.5	+0.2	0.0	-0.2	-0.5	-0.7	-1.0	-1.2	-1.5	-1.7	-2.0
10	1.2	0.9	0.6	0.3	0.0	0.3	0.6	0.9	1.2	1.4	1.7	2.0	2.3
20	1.3	1.0	0.7	0.3	0.0	0.3	0.7	1.0	1.3	1.7	2.0	2.3	2.6
30	1.5	1.1	0.7	0.4	0.0	0.4	0.7	1.1	1.5	1.9	2.2	2.6	3.0
40	1.7	1.2	0.8	0.4	0.0	0.4	0.8	1.2	1.7	2.1	2.5	2.9	3.3
50	1.8	1.4	0.9	0.5	0.0	0.4	0.9	1.4	1.8	2.3	2.7	3.2	3.6
2 0	+2.0	+1.5	+1.0	+0.5	0.0	-0.5	-1.0	-1.5	-2.0	-2.5	-3.0	-3.5	-4.0

TABLE D.

FOR FINDING THE LATITUDE OF A PLACE BY ALTITUDES OF POLARIS.

D = the 4th correction. (*D* has the same sign as *A* when the Dec. < 88° 40', the opposite sign when the Dec. > 88° 40'.)

Vertical Argument, *A* = the 1st correction. Horizontal Argument, the star's declination.

<i>A</i>	DECLINATION, 88° 39'.								88° 40'.						PROPORTIONAL PARTS.			
	20"	25"	30"	35"	40"	45"	50"	55"	0"	5"	10"	15"	20"	25"	1"	2"	3"	4"
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	1.0	0.9	0.7	0.6	0.5	0.4	0.2	0.1	0.0	0.1	0.2	0.4	0.5	0.6	0.0	0.0	0.1	0.1
4	2.0	1.7	1.5	1.2	1.0	0.7	0.5	0.2	0.0	0.2	0.5	0.7	1.0	1.2	0.0	0.1	0.1	0.2
6	3.0	2.6	2.2	1.9	1.5	1.1	0.7	0.4	0.0	0.4	0.7	1.1	1.5	1.9	0.1	0.1	0.2	0.3
* 8	4.0	3.5	3.0	2.5	2.0	1.5	1.0	0.5	0.0	0.5	1.0	1.5	2.0	2.5	0.1	0.2	0.3	0.4
10	5.0	4.4	3.7	3.1	2.5	1.9	1.2	0.6	0.0	0.6	1.2	1.9	2.5	3.1	0.1	0.2	0.4	0.5
12	6.0	5.2	4.5	3.7	3.0	2.2	1.5	0.7	0.0	0.7	1.5	2.2	3.0	3.7	0.1	0.3	0.4	0.6
14	7.0	6.1	5.2	4.4	3.5	2.6	1.7	0.9	0.0	0.9	1.7	2.6	3.5	4.4	0.2	0.3	0.5	0.7
* 16	8.0	7.0	6.0	5.0	4.0	3.0	2.0	1.0	0.0	1.0	2.0	3.0	4.0	5.0	0.2	0.4	0.6	0.8
18	9.0	7.9	6.7	5.6	4.5	3.4	2.2	1.1	0.0	1.1	2.2	3.4	4.5	5.6	0.2	0.4	0.7	0.9
20	10.0	8.7	7.5	6.2	5.0	3.7	2.5	1.2	0.0	1.2	2.5	3.7	5.0	6.2	0.2	0.5	0.7	1.0
22	11.0	9.6	8.2	6.9	5.5	4.1	2.7	1.4	0.0	1.4	2.7	4.1	5.5	6.9	0.3	0.5	0.8	1.1
* 24	12.0	10.5	9.0	7.5	6.0	4.5	3.0	1.5	0.0	1.5	3.0	4.5	6.0	7.5	0.3	0.6	0.9	1.2
26	13.0	11.4	9.7	8.1	6.5	4.9	3.2	1.6	0.0	1.6	3.2	4.9	6.5	8.1	0.3	0.6	1.0	1.3
28	14.0	12.2	10.5	8.7	7.0	5.2	3.5	1.7	0.0	1.7	3.5	5.2	7.0	8.7	0.3	0.7	1.0	1.4
30	15.0	13.1	11.2	9.4	7.5	5.6	3.7	1.9	0.0	1.9	3.7	5.6	7.5	9.4	0.4	0.7	1.1	1.5
* 32	16.0	14.0	12.0	10.0	8.0	6.0	4.0	2.0	0.0	2.0	4.0	6.0	8.0	10.0	0.4	0.8	1.2	1.6
34	17.0	14.9	12.7	10.6	8.5	6.4	4.2	2.1	0.0	2.1	4.2	6.4	8.5	10.6	0.4	0.8	1.3	1.7
36	18.0	15.7	13.5	11.2	9.0	6.7	4.5	2.2	0.0	2.2	4.5	6.7	9.0	11.2	0.4	0.9	1.3	1.8
38	19.0	16.6	14.2	11.9	9.5	7.1	4.7	2.4	0.0	2.4	4.7	7.1	9.5	11.9	0.5	0.9	1.4	1.9
* 40	20.0	17.5	15.0	12.5	10.0	7.5	5.0	2.5	0.0	2.5	5.0	7.5	10.0	12.5	0.5	1.0	1.5	2.0
42	21.0	18.4	15.7	13.1	10.5	7.9	5.2	2.6	0.0	2.6	5.2	7.9	10.5	13.1	0.5	1.0	1.6	2.1
44	22.0	19.2	16.5	13.7	11.0	8.2	5.5	2.7	0.0	2.7	5.5	8.2	11.0	13.7	0.5	1.1	1.6	2.2
46	23.0	20.1	17.2	14.4	11.5	8.6	5.7	2.9	0.0	2.9	5.7	8.6	11.5	14.4	0.6	1.1	1.7	2.3
* 48	24.0	21.0	18.0	15.0	12.0	9.0	6.0	3.0	0.0	3.0	6.0	9.0	12.0	15.0	0.6	1.2	1.8	2.4
50	25.0	21.9	18.7	15.6	12.5	9.4	6.2	3.1	0.0	3.1	6.2	9.4	12.5	15.6	0.6	1.2	1.9	2.5
52	26.0	22.7	19.5	16.2	13.0	9.7	6.5	3.2	0.0	3.2	6.5	9.7	13.0	16.2	0.6	1.3	1.9	2.6
54	27.0	23.6	20.2	16.9	13.5	10.1	6.7	3.4	0.0	3.4	6.7	10.1	13.5	16.9	0.7	1.3	2.0	2.7
* 56	28.0	24.5	21.0	17.5	14.0	10.5	7.0	3.5	0.0	3.5	7.0	10.5	14.0	17.5	0.7	1.4	2.1	2.8
58	29.0	25.4	21.7	18.1	14.5	10.9	7.2	3.6	0.0	3.6	7.2	10.9	14.5	18.1	0.7	1.4	2.2	2.9
60	30.0	26.2	22.5	18.7	15.0	11.2	7.5	3.7	0.0	3.7	7.5	11.2	15.0	18.7	0.7	1.5	2.2	3.0
62	31.0	27.1	23.2	19.4	15.5	11.6	7.7	3.9	0.0	3.9	7.7	11.6	15.5	19.4	0.8	1.5	2.3	3.1
* 64	32.0	28.0	24.0	20.0	16.0	12.0	8.0	4.0	0.0	4.0	8.0	12.0	16.0	20.0	0.8	1.6	2.4	3.2
66	33.0	28.9	24.7	20.6	16.5	12.4	8.2	4.1	0.0	4.1	8.2	12.4	16.5	20.6	0.8	1.6	2.5	3.3
68	34.0	29.7	25.5	21.2	17.0	12.7	8.5	4.2	0.0	4.2	8.5	12.7	17.0	21.2	0.8	1.7	2.5	3.4
70	35.0	30.6	26.2	21.9	17.5	13.1	8.7	4.4	0.0	4.4	8.7	13.1	17.5	21.9	0.9	1.7	2.6	3.5
* 72	36.0	31.5	27.0	22.5	18.0	13.5	9.0	4.5	0.0	4.5	9.0	13.5	18.0	22.5	0.9	1.8	2.7	3.6
74	37.0	32.4	27.7	23.1	18.5	13.9	9.2	4.6	0.0	4.6	9.2	13.9	18.5	23.1	0.9	1.8	2.8	3.7
76	38.0	33.2	28.5	23.7	19.0	14.2	9.5	4.7	0.0	4.7	9.5	14.2	19.0	23.7	0.9	1.9	2.8	3.8
78	39.0	34.1	29.2	24.4	19.5	14.6	9.7	4.9	0.0	4.9	9.7	14.6	19.5	24.4	1.0	1.9	2.9	3.9
* 80	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	0.0	5.0	10.0	15.0	20.0	25.0	1.0	2.0	3.0	4.0
PROPORTIONAL PARTS.																		
0 20	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0 40	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
1 0	0.5	0.4	0.4	0.3	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3
1 20	0.7	0.6	0.5	0.4	0.3	0.2	0.2	0.1	0.0	0.1	0.2	0.2	0.3	0.4	0.4	0.4	0.4	0.4
1 40	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.1	0.2	0.3	0.4	0.5	0.5	0.5	0.5	0.5
2 0	1.0	0.9	0.7	0.6	0.5	0.4	0.2	0.1	0.0	0.1	0.2	0.4	0.5	0.6	0.6	0.6	0.6	0.6

NOTE.—The numbers in the columns and lines marked * are exact.

TABLE D.

FOR FINDING THE LATITUDE OF A PLACE BY ALTITUDES OF POLARIS.

D = the 4th correction. (D has the same sign as A when the Dec. $< 88^{\circ} 40'$, the opposite sign when the Dec. $> 88^{\circ} 40'$.)

Vertical Argument, A = the 1st correction. Horizontal Argument, the star's declination.

A	DECLINATION, $88^{\circ} 40'$.						$88^{\circ} 41'$.					PROPORTIONAL PARTS.			
	30"	35"	40"	45"	50"	55"	0"	5"	10"	15"	20"	1"	2"	3"	4"
'	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.7	0.9	1.0	1.1	1.2	1.4	1.5	1.6	1.7	1.9	2.0	0.0	0.0	0.1	0.1
4	1.5	1.7	2.0	2.2	2.5	2.8	3.0	3.2	3.5	3.7	4.0	0.0	0.1	0.1	0.2
6	2.2	2.6	3.0	3.4	3.7	4.1	4.5	4.8	5.2	5.6	6.0	0.1	0.1	0.2	0.3
* 8	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	0.1	0.2	0.3	0.4
10	3.7	4.4	5.0	5.6	6.2	6.9	7.5	8.1	8.7	9.4	10.0	0.1	0.2	0.4	0.5
12	4.5	5.2	6.0	6.7	7.5	8.3	9.0	9.7	10.5	11.3	12.0	0.1	0.3	0.4	0.6
14	5.2	6.1	7.0	7.9	8.7	9.6	10.5	11.4	12.3	13.1	14.0	0.2	0.3	0.5	0.7
* 16	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	0.2	0.4	0.6	0.8
18	6.7	7.9	9.0	10.1	11.2	12.4	13.5	14.6	15.8	16.9	18.0	0.2	0.4	0.7	0.9
20	7.5	8.7	10.0	11.2	12.5	13.8	15.0	16.3	17.5	18.8	20.0	0.2	0.5	0.7	1.0
22	8.2	9.6	11.0	12.4	13.7	15.1	16.5	17.8	19.3	20.6	22.0	0.3	0.5	0.8	1.1
* 24	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	0.3	0.6	0.9	1.2
26	9.7	11.4	13.0	14.6	16.2	17.9	19.5	21.1	22.8	24.4	26.0	0.3	0.6	1.0	1.3
28	10.5	12.2	14.0	15.7	17.5	19.3	21.0	22.8	24.5	26.3	28.0	0.3	0.7	1.0	1.4
30	11.2	13.1	15.0	16.9	18.7	20.6	22.5	24.4	26.3	28.1	30.0	0.4	0.7	1.1	1.5
* 32	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	0.4	0.8	1.2	1.6
34	12.7	14.9	17.0	19.1	21.2	23.4	25.5	27.6	29.8	31.9	34.0	0.4	0.8	1.3	1.7
36	13.5	15.7	18.0	20.2	22.5	24.8	27.0	29.3	31.5	33.8	36.0	0.4	0.9	1.3	1.8
38	14.2	16.6	19.0	21.4	23.7	26.1	28.5	30.8	33.3	35.6	38.0	0.5	0.9	1.4	1.9
* 40	15.0	17.5	20.0	22.5	25.0	27.5	30.0	32.5	35.0	37.5	40.0	0.5	1.0	1.5	2.0
42	15.7	18.4	21.0	23.6	26.2	28.9	31.5	34.1	36.8	39.4	42.0	0.5	1.0	1.6	2.1
44	16.5	19.2	22.0	24.7	27.5	30.3	33.0	35.8	38.5	41.3	44.0	0.5	1.1	1.6	2.2
46	17.2	20.1	23.0	25.9	28.7	31.6	34.5	37.4	40.3	43.1	46.0	0.6	1.1	1.7	2.3
* 48	18.0	21.0	24.0	27.0	30.0	33.0	36.0	39.0	42.0	45.0	48.0	0.6	1.2	1.8	2.4
50	18.7	21.9	25.0	28.1	31.2	34.4	37.5	40.6	43.8	46.9	50.0	0.6	1.2	1.9	2.5
52	19.5	22.7	26.0	29.2	32.5	35.8	39.0	42.3	45.5	48.8	52.0	0.6	1.3	1.9	2.6
54	20.2	23.6	27.0	30.4	33.7	37.1	40.5	43.8	47.3	50.6	54.0	0.7	1.3	2.0	2.7
* 56	21.0	24.5	28.0	31.5	35.0	38.5	42.0	45.5	49.0	52.5	56.0	0.7	1.4	2.1	2.8
58	21.7	25.4	29.0	32.6	36.2	39.9	43.5	47.1	50.8	54.4	58.0	0.7	1.4	2.2	2.9
60	22.5	26.2	30.0	33.7	37.5	41.3	45.0	48.8	52.5	56.3	60.0	0.7	1.5	2.2	3.0
62	23.2	27.1	31.0	34.9	38.7	42.6	46.5	50.4	54.3	58.1	62.0	0.8	1.5	2.3	3.1
* 64	24.0	28.0	32.0	36.0	40.0	44.0	48.0	52.0	56.0	60.0	64.0	0.8	1.6	2.4	3.2
66	24.7	28.9	33.0	37.1	41.2	45.4	49.5	53.6	57.8	61.9	66.0	0.8	1.6	2.5	3.3
68	25.5	29.7	34.0	38.2	42.5	46.8	51.0	55.2	59.5	63.8	68.0	0.8	1.7	2.5	3.4
70	26.2	30.6	35.0	39.4	43.7	48.1	52.5	56.8	61.3	65.6	70.0	0.9	1.7	2.6	3.5
* 72	27.0	31.5	36.0	40.5	45.0	49.5	54.0	58.5	63.0	67.5	72.0	0.9	1.8	2.7	3.6
74	27.7	32.4	37.0	41.6	46.2	50.9	55.5	60.1	64.7	69.4	74.0	0.9	1.8	2.8	3.7
76	28.5	33.2	38.0	42.7	47.5	52.3	57.0	61.7	66.5	71.2	76.0	0.9	1.9	2.8	3.8
78	29.2	34.1	39.0	43.9	48.7	53.6	58.5	63.4	68.2	73.1	78.0	1.0	1.9	2.9	3.9
* 80	30.0	35.0	40.0	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	1.0	2.0	3.0	4.0
PROPORTIONAL PARTS.															
'	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
0 20	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
0 40	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7
1 0	0.4	0.4	0.5	0.6	0.6	0.7	0.7	0.8	0.9	0.9	0.9	1.0	1.0	1.0	1.0
1 20	0.5	0.6	0.7	0.7	0.8	0.9	1.0	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3
1 40	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.5	1.6	1.6	1.7	1.7	1.7	1.7
2 0	0.7	0.9	1.0	1.1	1.2	1.4	1.5	1.6	1.7	1.9	2.0	2.0	2.0	2.0	2.0

NOTE.—The numbers in the columns and lines marked * are exact.



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